VOLUNTEERS' PERCEPTIONS AND EXPERIENCES OF CLINICAL RESEARCH PARTICIPATION IN KENYA: CASE STUDY OF KAVI-ICR VOLUNTEERS

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DECLARATION

I, Emily Nyariki declare that this thesis is my original work and has not been submitted for award of a degree in this University or any other

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DEDICATION

I dedicate this work to

my beloved mother the late Terry Jane Nyariki and my daughter Serene Kemunto

my aunties: Janet, Billie and Asenath

With their love, prayers and much more, I have endured on!

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I thank God for His Grace that has remained sufficient through this journey.
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LIST OF ACRONYMS AND ABBREVIATIONS

ABPI	Association of the British Pharmaceutical Industry
AIDS	Acquired Immune Deficiency Syndrome
AoU	Assessment of understanding
ART	Anti-retroviral therapy
DAIDS	Division of AIDS
ESN	Exposed Sero Negative
FDA	Food and Drug Administration
HIV	Human immunodeficiency virus
HVTN	HIV Vaccine Trials Network
IAVI	International AIDS Vaccine Initiative
IC	Informed Consent
ICRW	International Centre Research on Women
IDIs	In depth interviews
IUD	Intra Uterine Device
KAVI-ICR	Kenya AIDS Vaccine Initiative, Institute of Clinical Research
KDHS	Kenya Demographic Health Survey
KIIs	Key Informant Interviews
MSM	Men having Sex with Men
NACC	National AIDS Control Council
NIAID	National Institute of Allergy and Infectious Diseases
NIH	National Institutes of Health
PLHIV	People living with HIV
PMTCT	Prevention of Mother to Child transmission
PREP	Pre-Exposure Prophylaxis
QUAL	Qualitative
QUAN	Quantitative
SPSS	Statistical Package for the Social Sciences
SWOP	Sex workers outreach program
UNAIDS	United Nations Program on AIDS
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization
WTP	Willingness to Participate

ABSTRACT

Background: The conduct of clinical research in low resource settings faces unique challenges that compromise optimal recruitment and participation of volunteers into studies. In Kenya, at KAVI-Institute of Clinical Research (KAVI-ICR), where a number of clinical research studies are being conducted, data from the recruitment sites reveal that eligible volunteers fail to turn up for actual enrolment even after providing consent to participate. Questions regarding volunteers' knowledge, understanding, and attitudes towards clinical research and how their experiences of participation affect their decision making have been raised. **Aim:** To examine volunteers' perceptions and experiences of clinical research participation and the potential impact on decision in order to improve the overall processes of clinical research implementation. Specifically the study sought to: describe the characteristics of individuals who participate in clinical research; examine individuals' perceptions towards clinical research participation; document volunteers' experiences at various stages of trial participation and their potential impact on decision making to participate. It further sought to identify factors that enhance and /or constrain clinical research participation experience and explore similarities and differences of participation experiences among volunteers in the various KAVI-ICR studies. **Methods:** A Mixed methods study applied a phenomenological approach to collect qualitative data. Data was collected from KAVI-ICR volunteers drawn from four vaccine studies, one observation study and one drug study. A survey tool was administered to 164 volunteers drawn from the six studies. Additionally 44 in- depth interviews (IDIs) were conducted with participants purposively selected from the 164 participants. Interviews were audio recorded, transcribed and coded for analysis. For data management and analysis, SPSS Version 13.0 was used for the quantitative data while Atlas *ti* was used for the qualitative. **Results:** A majority of the participants were of low social- economic status. Their ages ranged from 20 and 40+ years (mean=29.5; median=29) and most falling between 20029 years. Sixty-eight percent (68%) of the participants were males reflecting gender differences in participation. Occupations included - student/unemployment (19%), causal work (35%) small business (22%) while those on permanent employment (24%). Volunteers perceptions and experiences were shaped by a number of factors that varied with type of study and its requirements, trust relations resulting from interpersonal relations with clinical staff and significant others. Other important factors identified included information leading autonomous decision making, trials benefits such as health screening and continuous medical care while participating and transport reimbursement which for some was a boost to household incomes. However, volunteers raised concerns with trial demands such as collection of mucosal samples which were seen to be invasive and contravening cultural and religious beliefs. Other concerns were around randomization, false positive, risks suggesting incomplete understanding. **Conclusion:** Addressing factors that impact on volunteers' perceptions and experiences of participation is important in ensuring optimal enrolment and retention of future trials. Health inequalities resulting social and economic exclusion may impact on individuals' perceptions and decision making into clinical research participation. Future studies should therefore, consider incorporating mechanisms that will continuously engender volunteers and community members' trust and enhance individual decision making. Informed consent and assessment of understanding should be a continuous process through the life course of trial participation.

DEFINITION OF TERMS USED IN THE STUDY

Terms	Meanings/ application
Anatomical sterility	This is sterility that occurs as a result of abnormal growths or blockages in the reproductive area
Banking Protocols	Banking protocols are observational epidemiological studies that recruit individuals to who are screened in wait for upcoming studies. They also include studies that collected samples and epidemiological data for future analysis.
Clinical Research	is a branch of healthcare science that determines the safety and effectiveness (efficacy) of medications, devices, diagnostic products and treatment regimens intended for human use.
Clinical Trial	A clinical trial is a research study in which volunteers receive investigational treatments under the supervision of a physician and other research professionals
Contraception	the deliberate use of artificial methods or other techniques to prevent pregnancy as a consequence of sexual intercourse
Double Blind	In the context of a clinical trial, double-blind means that neither the patients nor the researchers know who is getting a placebo and who is getting the treatment
Efficacy	Is the capacity to produce desired result
Electroporation	Is the application of an electric current to a living surface (as the skin or cell membrane) in order to open pores or channels through which something (as a drug or DNA) may pass. It is based on use of high voltage electric shocks to introduce into the cells
Exposed Sero Negative	Refers to high risk person who is HIV uninfected/ Exposed to HIV infection yet un-infected
False Positive test	This is a vaccine-induced sero-positivity, where a person who has received a vaccine against a disease would therefore give a positive or reactive test for it, despite not having the disease. This happens because the vaccine encourages the body to produce antibodies against a particular disease.
Heterologous expression	Is the expression of a gene or part of a gene in a host organism, which does not naturally have this gene or gene fragment
Homologous Prime-boost	A preparation of a weakened or killed pathogen, such a virus, or of a portion of the pathogen's structure that is administered to prevent or treat infection by the pathogen and stimulating the production of an immune response.
Immune response	Is the body's ability to recognize and defend itself against bacteria, viruses, and substances that appear foreign and harmful
Immunogenicity	Immunogenicity is the ability of a particular substance, such as an antigen or epitope, to provoke an immune response in the body of a human or animal
Intramuscularly	Act receiving the study product by muscle injection
Intra-nasal	Is the delivery of medicine through the nostrils
Investigational Drug	Refers to a drug that is still under trial for safety and effectiveness
Memory aid	This is a book used to collect volunteer post-vaccination safety information in a clinical trial. After each dose of the vaccine, local and

	systemic reactogenicity is assessed daily for 7 days using participants' memory aid. To be able to do this, trial participants are provided with the book (memory aid) This book is for trial participants to record post vaccination experiences. On the memory aid, the subject is asked to record the date & time of assessment, maximum diameter of injection site redness and swelling, and systemic reactogenicity assessments including oral temperature, fatigue, malaise, myalgia, headaches, nausea, and vomiting. Upon return to the clinic, the subject reads the information on the memory aid to the research staff coordinator, who records the data on the CRF
Mucosal samples	Refers samples collected from the mucus membrane
Placebo	an inactive substance (often a sugar pill) given to a patient in place of medication
Placebo-Controlled Trial	This is a study that has a placebo product as a control
Preventive vaccines	These are vaccines that are meant to prevention disease occurrence like the polio vaccines
Randomized	the decision about whether a patient in the trial receives the new treatment or the control treatment (or placebo) is made randomly
Therapeutic Vaccines	These are vaccines meant to offer treatment

CHAPTER ONE

1.0 Introduction

This introductory chapter provides a background to the HIV and AIDS prevalence and prevention efforts as relates to Sub-Saharan Africa and Kenya in particular including milestones and challenges facing HIV vaccine research. The study problem, objectives and an outline of the thesis are also presented in this section.

1.1 Background

AIDS remains a leading cause of mortality in sub-Saharan Africa accounting for almost half of the World's HIV related deaths. UNAIDS estimates that there were 36.9million people living with HIV worldwide in 2017, with nearly 70% of them reported to be residing in sub-Saharan Africa (Global AIDS Update, 2017). The total number of new infections recorded in the same year was 1.8 million having declined from 3.4 million in 1996. Additionally, 18.2 million people aged 15 years and above were living with HIV; accounting for close to half of the new infections that had occurred in 2017. In the sub-Saharan region, the UNAIDS Gap Report (2017) further stated that there are more women living with HIV as compared to the males accounting, for 59% of the total number living with HIV in sub-Saharan Africa.

The total number of children under 15 living with HIV was 1.8 million with approximately 180,000 new infections having occurred in 2017. Close to 90% of the burden among children was emanating from sub-Saharan Africa, also accounting for 85% of the adolescent living with HIV. On the other hand, there is an observed global rapid decline of new infection among children (0-14) of about 58% resulting from the stepped- efforts to prevent mother-to-child transmission of HIV. Of concern, however, is the slower decline among adolescents (aged 15-19) that are affecting the achievement of global targets (Global AIDS Update, 2017).

Within the Eastern and Southern African region, 12.9 million PLHIV were accessing ARTs translating to almost four in ten people (37%) amid significant differences from country to country and sexes. In sub-Saharan Africa, 67% of men and 57% of women living with HIV are not receiving antiretroviral therapy. The period 2005-2013 saw a decline of maternal deaths among women living with HIV from 12,000 to 7,100 (WHO Maternal Mortality Report, 2014).

The spread of HIV in Kenya and larger sub-Saharan Africa is mostly through heterosexual relationships that include transactional and commercial sex as well as long-term relationships that include marriage. Children born to mothers living with HIV are also at heightened risk of acquiring HIV. Like many sub-Saharan African countries, Kenya has witnessed a decline in HIV related mortality rates, prevalence and new infections resulting from a number of HIV prevention and treatment efforts adopted (Jones, et al., 2019; Baeten, et al., 2016). These include Voluntary Medical Male Circumcision (VMMC), Prevention of Mother to Child transmissions (PMTCT) and Pre-Exposure Prophylaxis (PrEP). Other interventions include the introduction of Anti-retroviral therapy (ART) that has helped slow disease progression among those already infected. Population-based surveys undertaken in the last 10 years, revealed a decline of Kenya's HIV prevalence to decline from 6.3% (KDHS, 2008/9) to 4.8% (UNAIDS Estimates, 2018). The prevalence rate for women was 6.2% while for the men was 3.5%. On the other hand, 45,000 new infections occurred in the population aged 15 years and older.

Despite the observed decline, the country remains high HIV burdened contributing to 81% PLHIV within the region (UNAIDS, 2016). By the end of 2016, an estimated 1.6 million people were living with HIV with 830,000 of these being women (UNAIDS, Global AIDS update 2017). In the same period, an estimated 78,000 Kenyans were newly- infected with HIV while an estimated 36,000 AIDS-related deaths occurred. Kenya has both a generalized and a concentrated epidemic with the epidemic being deep-rooted among key populations with very high HIV prevalence as compared to the general population. Data from the Kenya National AIDS Control Council (2014) has shown that of the new infections that occur in Kenya 30% are among people from key populations. This is disproportionate to how many people from these groups exist within the population. Further, the Kenya AIDS Response Progress report (2016) has reported the following prevalence: Injection Drug Users (IDUs) at 18.3% men who have sex with men (MSMs) at 18.2%, while for Sex Workers at 29.3%).

Early optimism to breaking the trajectory of the AIDS epidemic envisioned in the UNAIDS Fast Track Targets, remain far from being realized in many countries. By 2020, 90% of people living with HIV would have known their HIV status, 90% of all people diagnosed with HIV to be on treatment in order to achieve viral suppression. Prevention targets, on the other hand, include reduction of the annual number of new HIV infections by more than 75%, to 500, 000 by 2020, and to 200, 000 by 2030. Achieving these targets require zero discrimina-

tion as a key target of the Fast-Track approach; but also intensified efforts to bring about substantial reductions each year in sexual HIV transmissions (UNAIDS, 2014, Fast Track and OutlooK: Cities Reports). While a number of milestones may have been achieved, UNAIDS warns that these goals may not be achieved with the observed rise in new infection in an estimated 50 countries, slow decline of AIDS-related mortality and heightened burden of new infections among key populations and their partners. (Global AIDS Updates, 2018- Miles to go Closing the Gap). With 1.9 million adults and over 150,000 children new infections occurring yearly, it is unlikely that 90% reduction by 2030 could bring an end to this scourge as there will still be around 200 000 new HIV infections annually. Finding an effective preventive vaccine remains an important tool to eliminating HIV (UNAIDS, 2017, Press Statement).

Since 1987, when the first HIV vaccine was developed, over two hundred Phase I/II vaccine candidates have been tried in many parts of the globe (Safrit, et al., 2016) with only a few moving to Phase 3 efficacy trials. Notable is the RV44 trial in Thailand that realized an efficacy of 31%. Lessons learned from this trial and other previous research have resulted in the doubling of efforts and technological advancement in mucosal immunology and other modalities. Whilst various ongoing efforts demonstrate a commitment to HIV vaccine development as a crucial component of combination prevention offering the best long-term strategy for addressing the most urgent global health challenge of our time, funding remains a major impediment (Gresham et al., 2018). Achieving this goal requires increased clinical research efforts to hasten the slow progression of vaccines development.

In Kenya, the KAVI- Institute of Clinical Research at the University of Nairobi has since its establishment in 1999, with the support of IAVI, conducted a number of phase 1 HIV vaccine trials, observational studies, and one PrEP study.

1.2 HIV Clinical Research

Since the reporting of the first cases of HIV/AIDS in the 1980s, there have been significant investments in basic, biomedical, behavioral, and social science research that have led to numerous HIV prevention interventions and life-saving treatments. With support from institutions such as NIH, pharmaceutical companies in partnerships with academic research institutions have helped develop, test, and demonstrate the efficacy of more than 30 life-saving antiretroviral drugs and drug combinations for treating HIV infection. These anti-retroviral drugs have transformed life for those with infected with and who have access to and can tolerate treatment.

In spite of these positive developments, there is increasing need to halt the spread of HIV through effective and acceptable prevention strategies such as finding a safe and effective vaccine. With the dynamism of the HIV virus, there are now increasing efforts in basic research to better understand the basic biology of HIV and the body's immune response to HIV infection. These efforts have resulted in development of vaccines and drugs that are undergoing testing for safety and efficacy before rollout.

Clinical research is a term used to refer to elements of scientific studies that involves human participants in trials to help translate basic research into new treatments and knowledge to benefit patients (NIH, 1997). These studies evaluate the safety and effectiveness (efficacy) of medications, devices, diagnostic products and treatment regimens intended for human use for prevention, treatment, diagnosis or relieving symptoms of a disease. The overall goal of clinical research is to develop knowledge and advance medical treatments to improve human health outcomes. Its conduct involves the recruitment and enrolment of willing and eligible participants in the studies to their completion.

Clinical research occurs in phases and there are four typical phases (HVTN, 2011; NHS, 2011) with each phase of testing as a separate clinic trial. All these phases involve human subjects. According to the NIH (2011), phase I trials involve an experimental product or treatment being administered on a small group of healthy volunteers (20–100) to evaluate safety and identify possible side effects. Phase II trials involve large number of healthy volunteers (100–300) to determine drug or treatment effectiveness and further evaluate its safety. Phase III trials involves administration of an experimental drug or treatment to large groups of healthy volunteers (1,000–3,000) to confirm effectiveness, monitor side effects, compare it with standard or equivalent treatments, and collect information that will allow the experimental drug or treatment to be used safely. Phase IV trials, also known as "post approval" is essential for tracking drug or treatment safety, gathering more information about the drug or treatment risks, benefits, and best use.

Different terms describe clinical research, and these include clinical studies, research trials that either be of vaccine or drug and protocols. In response to eliminate HIV, there have been efforts towards developing an effective preventive vaccine to bring HIV to a halt. Other efforts have included development of drugs and conducting observation studies to best understand the HIV virus for better response.

An important aspect in the implementation of clinical research is randomization. Randomization is as a method of experimental control that is widely used in human clinical trials and other biological experiments. Within the context of clinical research, randomization ensures that each patient has an equal chance of receiving any of the treatments under study, by producing comparable intervention groups, which are similar in all the important facets except for the intervention each group receives. The randomization process only begins after individuals have undergone screening and found eligible to participate in a given study.

Studies that adopt randomization are referred to as randomized controlled trials (RCT). Often considered as the gold standard for clinical research; randomized controlled trials help to test the efficacy and effectiveness of various types of medical interventions and may provide information about adverse effects, such as drug reactions. RCTs can also be placebo (inactive product) controlled, meaning that they will have a placebo as a control of the active product. These trials can also be either single blinded or double blinded. For the single blinded the study, participants have no idea whether they are receiving the active product or a placebo. In double blind on the other hand, both the study participants and trial staff, are blinded to what product study participants are assigned to until the un-blinding at end of study.

a) HIV vaccine clinical trials

The development of an HIV vaccine(s) has become a global priority (Global HIV Vaccine Enterprise 2012; UNAIDS, 2017 Press Statement). Two different types of vaccines are being explored namely the **preventive vaccines** that are for people who are HIV-negative and the **therapeutic vaccines** for people who are HIV-positive to strengthen the immune system to prevent the progression of HIV to AIDS. Before a vaccine gains approval for marketing, there are a series of phased trials conducted within a clinical setting. The aim of the trials is to establish the safety, general immune response and efficacy of the vaccine. These trials occur in four stages of which only three involve human volunteers (HVTN, 2011) with varying population sizes. In some cases, individual trials may encompass more than one phase. A common example of this is combined phase I/II or phase II/III trials. The phase I trials, also referred to as *'the first human trials',* involve relatively small numbers (20-100) of uninfected low-risk volunteers and are designed to test the safety of a vaccine. Phase II trials are larger that engage several hundred of health volunteers with varying degrees of risk. Their goal is to better characterize the safety of the vaccine and immune response. The phase III trials on the

other hand are very large and involve thousands of healthy volunteers in high-risk groups. They provided for further assessment of vaccine efficacy in preventing HIV infection.

The search for an HIV vaccine goes back to the late 1980 and since then, over 200 Phase I candidate vaccines have been developed and tried in many parts of the globe. Despite these efforts, only four have moved to phase III efficacy trials. Notable, is the RV 144 trial that showed a modesty efficacy by reducing HIV infections in the hosts by 31% (Hsu and O'Connell, 2016; AIDSMAP, 2019). Although the period for eventual vaccine discovery remains unknown, findings from this study have re-awaked the zeal towards increased research efforts. Shin (2016) in the analysis of the recent vaccine development efforts, takes note of increased understanding correlates of protection in HIV infection and immune pathways to effective antibodies has been witnessed in the research journey. As the search continues the need for eligible and willing volunteers, remains.

b) Drug Trials/Investigational drugs

Just like the vaccine trials, drug trials involve the process where medical research studies investigate/ evaluate safety and effectiveness of a given drug/s before approval by drug regulatory bodies such as Food and Drug Administration (FDA, for the USA). Like the HIV vaccine trials, drugs trials undergo four typical phases with each phase having different goals and helping researchers answer given questions. Phase 1 trials involve a small number of people (20–80) for the first time to determine product safety. Phase 2 has larger groups of people (100–300) to determine its effectiveness and evaluate safety while phase III trials, are done with large groups of people (1,000–3,000) to confirm drug effectiveness, monitor side effects, compare it with standard or equivalent treatments, and collect information that will allow the investigational drug to be used safely (Fisher et al., 2015). The final phase, phase IV occurs after a drug approval and usually aims at garnering more information about the drug's risks, benefits, and optimal use.

c) Observation studies

Observational studies involve assessment of health outcomes in groups of participants according to a protocol or research plan. Participants may receive interventions, which can include medical products, such as drugs or devices, or procedures as part of their routine medical care, but participants are not assigned to specific interventions by the investigator (as in a clinical trial). In HIV clinical research, observational studies often serve as the basis for sub-

sequent evaluative studies or clinical trials. In some instances, volunteers previously enrolled in HIV vaccine trials are also follow-up to assess the long-term health status**.**

1.4 Problem statement

The conduct of clinical research faces unique challenges that compromise optimal recruitment and retention of volunteers into studies. In Kenya, at the KAVI-Institute of Clinical Research where a number of clinical research studies are being conducted, data from the clinics has shown 18% of eligible volunteers fail to turn up for enrolment (Omosa-Manyonyi et al., 2011) even after consenting and showing motivation. Retention success rates on the other hand for a number of studies are at 90%. In spite of this success, there is no documentation on how volunteers' experiences influence their overall participation and what potentially influences their decision-making. Kost et al., (2011), have noted that although regulatory and ethical guidelines exist to offer research participants protection of rights and safety, current mechanisms to assess the extent to which researchers are meeting these are limited, with much focus being overly on process completion such completion of informed consent. They argued that, assessing participants' perceptions on how aspects such accuracy of transfer of information, voluntariness and safety were accomplished in the clinical research process have potential to provide robust and informed evidence about the quality of these processes. And that improved understanding of research participants' experiences with respect to autonomy, safety and satisfaction can help researcher meet ethical obligations in the conduct of clinical research. This view is further amplified by Yessis et al., (2012), who observe that knowledge on participants' views regarding their experiences of clinical research participation not only provides outcome- based insights into the effectiveness of efforts to protect rights and safety, but also opportunities to enhance participants' clinical research experience. Moreover, although HIV vaccine clinical research occurs within a context where biomedical science and social issues are interlinked (Lau Chuen-Yen et al., 2011); there is not much attention towards understanding participation experience from the perspective of the study participants. A dearth of knowledge therefore exists on how volunteers experience and perceive the entire clinical research process; from recruitment, information, informed consent process, screening, enrolment, risk perception, benefits and follow-up; and how these impacts on their willingness and decision making regarding clinical research participation in addition to ethical obligations being met. It is in this view, using a mixed method phenomenological approach, this study sought to understand how volunteers' perceptions and experiences of clinical research affects their decision making about participation.

1.5 Study Scope

This study drew participants from KAVI-ICR's past, ongoing and recruiting (at the time of data collection) clinical research studies. For over a decade now, the KAVI-Institute of Clinical Research has conducted HIV clinical trials (vaccine, drugs and observational studies) at its trial sites at the University of Nairobi School of Medicine- Kenyatta National Hospital and the Kangemi City County Clinic. The studies in question comprised of four vaccine studies, one immunological observation study and a Pre-exposure Prophylaxis (PrEP) drug study. A selected number of trial staff from the two trial sites, were also included as study respondents.

1.6 Significance of the study

This study examined clinical research volunteers' perceptions and experiences of research participation with an aim of improving the conduct of clinical research processes through addressing specific needs. Although there have been significant developments in biomedical research, this field is faced with unique challenges that have to do with optimal recruitment and retention of trial volunteers. There is now growing acknowledgement on the potential role of understanding social and behavioral issues in the conduct of HIV clinical research and the uptake of prevention and treatment options. Therefore, this study aims at providing understanding on the influence of social and behavioral issues on individuals' experiences of clinical research and decision making for participation.

Studies evaluating barriers to participation in HIV clinical trials, have found fear of stigmatization to be a major deterrent to clinical research participation intentions (Nyblade et al., 2011) in addition to fears of potential risks of participation. There are similar findings by Kadam et al. (2016) in a study carried out in India among 73 investigators to understand the challenges in recruitment and retention of clinical trial subjects. Among the barriers cited were complexity of study protocol (38%), lack of awareness about clinical trials in patients (37%), and sociocultural issues related to trial participation (37%). The study further found that experiencing a serious adverse event, subjects' fear for study procedures (47%) and side effects (44%) had potential to affect subject retention.

To increase understanding of the intersections between biomedical science and social behavioral science, Lau et al., (2011) has developed a framework for behavioral and social science in HIV clinical research. In this framework Lau and colleagues have argued that clinical research occurs within a context where biomedical science and social issues are interwoven,

hence the need for integration of basic, clinical and social research methods in the search for an effective HIV vaccine. This study is therefore of programme and clinical research relevance and will contribute greatly to the design of future clinical research studies in Kenya and the region.

The KAVI- Institute of Clinical Research (KAVI-ICR) has for over a decade, recorded success in recruitment and retention of volunteers into many of its trials. Despite this success, like in other trial sites elsewhere, cases of eligible volunteers declining to enroll into trials while others drop out upon enrolment have been observed. These occurrences point to the need for further understanding on how volunteers experience various stages and aspects of clinical research and the implications of the same on decision-making. Findings from this study will contribute to improving recruitment processes at KAVI-ICR trials thereby increasing volunteers' satisfaction with participation and overall research experiences. Findings from this study have potential to inform on the communities' information needs leading to targeted community literacy for enhanced decision making among study volunteers. The study has the potential to show case key lessons and best practices in the conduct of clinical research across the KAVI –ICR for the benefits of trials elsewhere.

With the dynamism of the HIV epidemic and transmission patterns changing globally, the KAVI-ICR is continuously engaged in trying new and novel approaches in understanding the HIV virus and its behavior such as studying the human mucosa surfaces that include collecting mucosal samples from various parts of the body such as rectal-anal; cervical, nasal and sperms. Although available data from the clinics and Omosa-Manyonyi et al., (2011) report acceptance and tolerance for invasive mucosal sampling, literature on how volunteers perceive and experience this phenomenon is lacking. Findings from this study, will therefore add to the missing understanding on how volunteers experience and perceive various forms of study requirements and procedures, in order to inform future trials as well as addressing fears relating to trials participation.

This study used a mixed method phenomenological approach while anchoring on the social and biomedical framework espoused by Lau and colleagues (2011). This study therefore, provides a learning platform to other researchers on the usability of the foresaid frameworks within the context of understanding the social behavioral factor affecting the conduct and implementation of clinical research in an African setting.

1.7 Study Purpose

This study aimed at exploring volunteers' perceptions and experiences of clinical research participation and their influences on decision- making and willingness to participate in clinical research.

1.7.1 Objectives

Broad objective

To examine volunteers' perceptions and experiences of clinical research participation and the potential impact on decision in order to improve the overall processes of clinical research implementation.

Specific objectives

1. Describe the characteristics of volunteers who participate in clinical research.
2. Examine volunteers' perceptions towards clinical research participation
3. Examine volunteers' experiences at various stages of trial participation and the potential impact on decision making to participate
4. Identify factors that enhance and /or constrain clinical research participation experience
5. Explore similarities and differences of participation experiences among volunteers in the KAVI studies.

1.8 Research questions

Key research question

How are volunteers' perceptions and experiences of participation in clinical research likely to affect their willingness and decision making to participate in clinical research studies?

Specific research questions

1. What are the socio-economic and demographic characteristics of individuals participating in clinical research?
2. How do volunteers perceive clinical research participation?
3. What are the experiences of volunteers through the various stages of research participation and how do these experiences influence their decisions to participate or not to?
4. What factors enhance and /or constrain individuals' clinical research participation?
5. What are the similarities and differences of participation experiences among individuals in the KAVI studies?

1.9 Assumptions

This study was guided by two assumptions namely:

1. Volunteers' perceptions and experiences of clinical research participation are likely to impact on their decision making to participate in clinical research.
2. How volunteers perceive and experience their participation in clinical research has the potential to give understanding on the extent to which trial sites meet ethical obligation in clinical research implementation

1.10 Structure of the Thesis

Chapter 1: Introduction

This chapter introduces the thesis by providing a background to the HIV and AIDS prevention efforts as relates to Sub-Saharan Africa and Kenya in particular including milestones and challenges facing HIV vaccine research. In this section, provided also are the definitions of terms used in the thesis as well as the study aim, objectives and the outline of the thesis.

Chapter 2: Literature review

This chapter presents the literature reviewed under the following headings: efforts and milestones in HIV/AIDS prevention, conduct of clinical research in the region with a focus on Kenya and HIV clinical research participation. It also presents the theoretical, conceptual and operational frameworks that guide this study.

Chapter 3: Methodology

This chapter describes the study methodology. It outlines research design adopted for this study and rationale, study aims and objectives, study population, sampling methods, data collection methods and instruments, data management and analysis, trustworthiness of data, investigator positionality in the research process, limitations of the study and ethical considerations.

Section 3.1: Research design
Section 3.2: Study context
Section 3.3: Background to KAVI-ICR HIV Clinical Studies
Section 3.4: Description of selected KAVI studies
Section 3.5: Study Population
Section 3.6: Sampling procedures
Section 3.7: Methods of data collection
Section 3.8: Ethical Considerations
Section 3.9: Data collection
Section 3.10: Data Management
Section 3.11: Data Processing and analysis
Section 3.12: Study Limitations
Section 3.13: Positionalities in the study

Chapter 4: Results

This chapter provides the findings of the study. They reflect the views of the respondents by study type using a mixed method approach with the qualitative approach taking prominence The findings fall into four sections based on the five study objectives with objective 2, 3 and 5 having merged as follows:-

Section 4.1: A description of the study participants' characteristics with regard to participation in clinical research.

Section 4.2: Perceptions and experiences of clinical research participation- gives an account of volunteers' perceptions and experiences at various levels of clinical research participation and their potential impact on decision making

Section 4.3: Factors that enhance and /or constrain clinical research participation experience from the perspective of the study respondents

Chapter 5: Discussion

This chapter provides a discussion of the study findings within the context of the theoretical and conceptual frameworks that have guided this study.

Chapter 6: Conclusions and Recommendations

This chapter provides conclusions and recommendations of the study based on the study findings and discussion. It also provides a way forward for future studies on community engagement in vaccine studies.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of literature that pertains to clinical research participation at international, regional levels and in Kenya. It also explores the theoretical underpinnings and the conceptual framework anchoring this study.

2.2 Conducting Clinical Research

The goal of clinical research is to develop knowledge and advance medical treatments to improve human health outcomes. In a broader sense, clinical research includes medical and behavioral research that involves eligible volunteering participants; carefully developed and conducted investigations with expected clinical outcomes. It also involves identification of better and novel ways to prevention, diagnosis, treatment and understanding of human disease; trials that test new treatments, clinical management and clinical outcomes, along term studies (Gallin, 2002).

Although the developing and under developed countries bear the greatest disease burden, they account for the least number of trials conducted globally. An analysis to determine the geographic distribution and trend of clinical trial recruitment sites in developing and developed countries using *ClinicalTrials.gov*, data has listed United States, Germany, France, Canada, and Japan to account for over 90% of total recruitment sites (Luo et al., 2017). This being a result of robust pharmaceutical and medical research that built over time. Luo's data further reveals a growing trend of clinical sites with developing countries in Central America (19.60%), Western Africa (18.40%) and the Middle East (16.52%) showing relative fast increase compared to other regions. The expansion of clinical trials to research naïve now termed 'globalization of clinical trials' has been necessitated by demand for development of new drugs, international research collaborations, economics of reducing trial costs and diversity in regional participant recruitment.

While the expansion of the clinical research landscape is steadily changing, conducting clinical research in developing countries or resource-limited settings presents a reminiscence of historical atrocities that have happened in the name of finding treatments linger on. Commonly known are Tuskegee syphilis experiments in the USA and the Nazi Germany concentration

camps and several others in many countries. Varying unethical medical research on nonconsenting persons resulting into thousands of deaths and affected survivors have been reported (Weindling et al., 2016).

Efforts to bridge the gap and provide guidance for ethical conduct of clinical research has resulted in the development of various codes, legislations, standards and guidelines that have been widely adopted. At national levels, ethical committees exist to offer oversight and guidance in the domestication of various international guidelines. Some the notable ones are the Nuremberg Code, Declaration of Helsinki, the Principles of Biomedical ethics and the International ethical guidelines for health-related research involving humans by CIOMS. With the changing research landscape, some of these documents especially the Principles of Biomedical Ethics and the International ethical guidelines are continuously under review in response to emerging questions. Other guidelines developed over time are the Good clinical laboratory standards and Practices (GCLP) by the Division of AIDS (DAIDS). They provide guidance on training and certification of laboratory personnel for the safety and security of the research participants. The Good Clinical Practice (GCP) is an international quality standard that helps governments to regulate clinical trials involving human subjects in host countries. These guidelines provide for how to address issues of human rights protection for subjects in clinical trials and assurance of the safety and efficacy of the newly developed compounds (WHO, 2002). The guidelines also offer standards for conducting clinical trials, as well as a definition of the roles and responsibilities of clinical trial sponsors, clinical research investigators, and monitors.

There have been concerns around ethics and legal implications relating to risks of participation in experimental products; more so where research is also being conducted among minorities and vulnerable groups. Some of the arguments that have been fronted in this regard include the likelihood of potential participants not achieving full understanding of what research participation entails. While participants are required to understand both the potential negative effects of participation as well as complex aspects like randomization and prophylaxis in order to be ethically enrolled, the extent to which these obligations are met in many settings is not known. Citing the need for improved understanding of various ethical and societal concerns related to HIV/AIDS treatment and research, Muthuswamy (2005) has highlighted a number of ethical issues needing attention. These issues revolve around the standard care of volunteers, implementing informed consent in cross cultures, privacy, confidentiality,

stigma and discrimination, protection of vulnerable groups, community consultation and community benefits among others.

In developing countries, such as those in the sub Saharan Africa, with high disease burden, poor access to health care, high poverty index coupled with high illiteracy rates ethical and practical challenges related to administering the informed consent (Mystakidou et al., 2011, London et al., 2011) have been noted. Fisher et al., (2015) note that resource-based vulnerability is not just a phenomenon of developing countries but also extend to minority groups in developed countries. Moreover, the World Medical Association in Helsinki Declaration (2013) notes '*Some groups and individuals are particularly vulnerable and may have an increased likelihood of being wronged or of incurring additional harm. All vulnerable groups and individuals should receive specifically considered protection'*. The requirement of the participation of healthy volunteers in phase I HIV vaccine trials continues to raise ethical questions. Of much concern are those recruited from the poor resource settings and the among minority groups. Healthy volunteers, particularly those from poor resource settings, have been considered vulnerable as research benefits may override their true intentions and decision to participate (CIOMS, 2016).

HIV Clinical Research participation

HIV clinical research participation occurs over series of levels that starts with recruitment, receiving information, providing informed consent, screening for eligibility, enrolment and eventual follow-up upon completion of investigational period.

Recruitment

Successful implementation of HIV clinical research is dependent on effective recruitment, enrolment and retention of eligible and willing volunteers into studies. Poor accrual of research participants not only affects trial outcomes, and immense strain on institutional resources but also ethical implications in the case of premature closure.

Recruit remains a challenge, notwithstanding the significant resource investment in clinical trials (Bower et al., 2014) and several efforts to identify and address barriers to recruitment (Treweek et al., (2013). In their review, Treweek and colleagues have identified strategies to address recruitment barriers to include telephone reminders, open-trial designs, opt-out strategies and financial incentives, and application of hypothetical trials. Nevertheless, a number

of trials have reported failure to meet recruitment goals resulting into delays or premature trial termination for some. For others, inability to draw trials conclusions as a result of loss of statistical power has been reported- a situation that results into important scientific, financial, ethical, and policy implications.

Carlisle and colleagues (2015), in their analysis of recently closed trials found that 19% registered trials that were closed or terminated in 2011 had failed to meet accrual goals of 85% expected enrolment thus affecting their statistical power. Noting the potential ethical implications from the failure of the 481 trials that had engaged more than 48,000 participants, the reviewers recommended the need for ethics bodies, and research implementers to carefully evaluate trial designs, recruitment plans, and practicability of achieving recruitment targets when designing and reviewing trials, monitor accrual once initiated, and taking corrective action to counter recruitment challenges.

Diversity inclusion in recruitment

Disparities in health, healthcare and health outcomes across populations are widely researched and documented in literature. Better understanding of disease developments and patterns for the benefit of public clinical research that accounts of diverse. Efforts by the FDA and other regulatory bodies such as NIH in agitating for inclusivity in the recruitment and enrolment of study participants that reflects the demographics of clinically relevant populations for their products with regard to age, sex, race, and ethnicity, is yet to be achieved in many settings both in the developed and developing countries (Oh et al., 2015).

Buchard et al., (2003) note that the development of wide encompassing treatments that are effective for all populations, it is necessary to include of all genders, races, and socioeconomic statuses of human population in clinical trials. Stronks et al., (2013) add that evidence-based medicine aimed at improving quality of care for all patients, must consider diversity issues in designing clinical studies by applying mixed methodological approaches. Despite this knowledge, available literature shows glaring disproportionate representation of certain populations in clinical research in many parts of the world. Of particular concern, is the low representation of females, minority groups, key populations, lower socio-economic status, youth and children participating in HIV clinical research.

The rationale for addressing diversity population inclusive clinical research is in line with

statistics and patterns of morbidity and mortality resulting from HIV and AIDS. Available statistics on the burden of HIV/AIDS for instance point to the vulnerability and burden of HIV in certain sub populations. In many developing and least developed countries, HIV and AIDS overly affect women and girls. In the sub-Saharan region where more than 70% of the HIV burden lies, three of the four new infections occur among girls 15–19 years while young women aged 15–24 years are twice as likely to be living with HIV compared to men. A staggering 7000 young women aged 15–24 years become infected with HIV on a weekly basis (UNAIDS Report, 2018). The report further shows the risk of acquiring HIV to be 13 times higher for female sex workers and 12 times higher for transgender women compared to the general population.

Scully (2018) in a review outlining the multilevel effects of biological sex on HIV acquisition, pathogenesis, treatment response, and prospects for cure reported biological sex predisposition to be a key risk factor. The review singled out five critical sex differences domains relevant to HIV transmission and acquisition namely- anatomy, genetics, immune cell, latency and microbiome and how women are particularly at risk compared to the males. The study concluded that differentiating the immune pathways across sexes for indication of optimal treatment responses to vaccine candidates should be male and female inclusive.

Oh et al., (2015) in a study in America found, that although health disparities exist across race /ethnicity, delivery of healthcare extrapolated data on research conducted among dominant white population and mostly men. They noted that although the racial and ethnic minorities account for nearly 40% of the American population, they were not fully benefiting from the clinical and biomedical advances creating a gap in understanding the causes and burden of disease amongst the population. It recommended the full representation of all populations into biomedical research to reflect the dynamic demographics as a matter of social justice, economics, and science.

The FDA snap report (2016), on the diversity of clinical trial participants in studies conducted in 2015 and 2016 in the United States showed that out of over 31,000 patients who participated in clinical trials for novel products in 2016, 48% of the study participants were women, an increase of 8% from 2015. There was an increase in African American participation in clinical trials from 5% in 2015 to 7% in 2016 while participation of the non-Hispanic whites decreased from 12% to 11% between 2015 and 2016.

Huamani et al., (2019) in their analysis demographic characteristics of the enrolees into the US preventive HIV vaccine clinical trials from 2002 through 2016 and those of past 1988-2002 racial/ethnic minority groups were seen to have increased from 16.7% to 32.8%($p<0.001$). On the other hand, the proportion of the non –Hispanic whites had declined from 83.2% to 67.2%. The study concluded that although the enrolment of racial/ethnic minority groups into the HVTN conducted trials has increased, it remains underrepresented in new HIV diagnosis in comparison to other groups.

Despite the available evidential data, on women's burden with HIV and other aspects of health, they continue to be under-represented in clinical research. Curno et al., (2016) in their systematic review of women's inclusion (exclusion) in HIV research noted that women represented 19.2% of participants in ARV studies, 38.1% in VAX studies, and 11.1% in CURE studies. The review further reported a missing correlation between funding and the proportion of female participants in VAX and CURE studies as compared to ARV studies ($P = 0.03$). There were high proportions of women attending ARV trials funded by private non-commercial in contrast to the publicly funded trials that had the lowest female participation (median 16.7%). On the other hand, the average proportion of women in ARV trials that were fully or partially funded by the National Institutes of Health was significantly lower in comparison to the average trials funded by other sources (19.6% vs. 22.3%, $P = 0.001$). The reviewers recommended urgent sex/gender considerations in HIV clinical studies.

Daniel et al., (2015) note that although transgender women like other most at- risk population are a high risk of HIV infection few are benefiting from the available prevention tools. In their review to determine the extent to which this population was eligible for inclusion and enrolment in PrEP efficacy trials in the USA, the transgender women comprised only 1.2% in 1 trial and 0.2% of total trial enrolments. The study recommended further research to determine the effectiveness of PrEP in this marginalized population and their experiences with accessing PrEP. An understanding of the characteristics of study volunteers is important in informing recruitment strategies and overall implementation of clinical research processes while taking account of the prevailing diversities.

Recent studies have reported barriers to recruitment to include challenges of finding participants that meet the set eligibility criteria and complexities with study protocols. Mahon et al., (2015) from their study targeting stakeholders to understand recruitment, various forms of

barriers identified. These ranked on level of significance and to the stakeholders; the leading barrier was that of finding or identifying patients who meet eligibility criteria (81%). The others barriers were insufficient staff time for recruitment (67%), length and complexity of consent forms (66%), and protocol requirements other than recruitment criteria (60%).

Informed consent

The informed consent (IC) remains a key yardstick for the conduct of ethical clinical research. Rooted in the Nuremberg Code, the Helsinki Declaration of 1964, the Belmont Report and others, the informed consent is widely recognized as a legal, moral and regulatory requirement for the conduct of clinical research involving human subjects (World Medical Association, 2013, CIOMS, 2016). The protection of human subjects in guided by four ethical principles:- respect for autonomy, beneficence, non-maleficence, and justice (Beauchamp and Childress, 2013). Respect for autonomy dwells on respect of persons and their rights of self-determination in the decision, to participate or not; based on information provided and understanding. Beneficence and non-maleficence hold that the researcher should act in the subject's "best interest" by guaranteeing maximum benefits and minimal harm. Justice, on the other hand, touches on aspects of inclusion/exclusion criteria of research subjects while ensuring equal chances of participation. Key to achieving these principles is the informed consent process.

As a principle and a process, the informed consent fulfills the following elements: disclosure, understanding, capacity, decision, and voluntariness have been realized (Beauchamp and Childress, 2013). Disclosure demands that participants receive all pertinent information about the study including goals, procedures, risks, and potential benefits. Capacity implies that potential research participants must have legal and mental capacity to understand the information and determine the decision to take. Understanding focuses on ensuring participants comprehend and see relevance in the information provided. Decision, centers on participants' self-directed or autonomous decision while voluntariness calls for individuals' free willed decisions.

Despite the known goals of the informed consent, its efficacy and validity remain debatable. In many settings, clinical researchers are unable to communicate highly technical scientific information to participants with low literacy, from diverse sociocultural background with diminished autonomy; which in essence affects informed consent attributes of adequacy of in-

formation received understanding, comprehension, competence, and voluntariness (Tam et al., 2015, Villamañán et al., 2016, Kadam, 2017). A study exploring the efficacy of the informed in Uganda reported that although signing the informed served as an indicator of an individual's willingness to join a study it cannot act as a proxy for understanding the information provided (Ssali et al., 2016).

Nair and Ibrahim (2015) in their study assessing informed consent form compliance to Good Clinical Practice (GCP) guidelines and the readability in the United Arab Emirates reported significantly lower overall GCP compliance of 55.8% non-sponsored studies in compared to 79.5% for industry-sponsored studies. Basic information relating to the participants' rights and responsibilities only appeared in 33% of sponsored and 16% of non-sponsored studies. Although, reading grade level score was higher than expected, scores for the ICFs from the industry sponsored studies were 9.7 ± 0.7, significantly lower in relation to 12.2 ± 1.3 for non-sponsored studies. The study recommended simplification of the informed consent information and use of multimedia technology to increase understanding of the information

While there have been various efforts to improve the quality of informed consents, evidence has shown participants to have incomplete understanding of the many facets of the informed consent information, even when they claim to have understood. A systematic review of participants' understanding of the informed consent over three decades found that although participants had varied understanding on different aspects of the informed consent information, the proportion of participants that understood had not increased over a period of 30years (Tam et al., 2015). A study conducted in Uganda reported that volunteers were able to remember information provided at the start of the trial such as procedures such collection blood and urine samples, they had difficulties on the information relating study design and randomization (Ssali et al., 2015).

Findings from studies conducted in Kenya, show similar views as those shared elsewhere about implementing the informed consent. Molyneux et al., (2004) in their study conducted in the coastal region of Kenya found trial benefits to override the decision to consent to collection of blood samples. Cases of fear and perception that decline to participate in the trials may affect access to health care in the future were also reported. Vreeman et al., (2013), in their study investigating community perspectives on informed consent and research participation in western Kenya found that although participants had understanding on some principles

of biomedical research; they had more inclination to participating for perceived benefits over potential risks. In a study conducted among trials participants in Eldoret (Naanyu et al., 2014), the extent to which participants understood aspects of the informed consent varied as attested by one participant: *"I understood…but some parts were confusing and hard to grasp".* These findings and others elsewhere point to the need for continuous evaluation of research participants' opinions and experiences of research for improved trial protocols and increased understanding of trial information to allow for true informed consent.

Barriers to clinical research participation

Understanding factors that hinder potential individuals from participating in clinical research is important in addressing recruitment and enrolment challenges. Although the last two decades have witnessed several efforts towards increasing visibility and acceptability for clinical research participation, such community engagements a number of factors or barriers exist.

In their review of literature, Ross et al., (1999) based on publications dating 1986 to 1996; identified several barriers to recruitment of clinicians and patients into randomized controlled trials. The barriers relating to patients' participation included trial demands, patient preferences, fears resulting from uncertainty, and concerns about information and consent. Dhalla and Poole (2011) have reported similar findings, in their comparative systematic review on barriers to participation in HIV vaccine studies, between the Organization for Economic Co-operation and Development (OECD) countries and the non-OECD countries. The barriers identified fell under personal risks, social risks and personal costs categories. Reference to personal costs was high in non-OECD countries as compared to the OECD. Similarly, 19 papers from the non-OECD in contrast to nine from the OECD reported social risks. Although these findings were a reflection of hypothetical studies, actual vaccine trials have also reported similar findings.

Studies evaluating barriers to participation in cancer clinical trials have reported similar concerns as those found in HIV research. The concerns include dislike for randomization, discomfort with the research process, fears of potential side effects, and mistrust of physicians, limited knowledge and lack of education regarding clinical trials among others according to (Mills et al., (2006). Ford et al., (2008) has on the other hand viewed these concerns to fuel the heightened face of underrepresentation of minority groups into cancer trials. These studies and others have suggested that identification of such barriers to participation would aid in

better recruitment strategies and enhance their participation experience in order to minimize on distress levels experienced.

A study conducted in Tanzania on reasons for failing to enrol eligible volunteers after randomization, found that fear of negative outcomes of an experimental vaccine and discouragement from significant others to be major reasons (Tarimo, et al., 2011). In a study conducted in Malawi (Mfutso-Bengo et al., 2008) some of the factors for declining to participate, were failure to follow traditional customs, lack of study benefits, superstition, poor informed consent procedures, ignorance of health research, fear of strangers, lack of cultural sensitivity, poor timing, and previous bad research experience. It recommended the need for researchers to embark on community engagement in order to address community related concerns.

Nyblade et al., (2011) in their study to understand the gender and social barriers to participation in HIV vaccine trials in Kenya, volunteers and community members reported barriers to include fear of risks/ side effects, mistrust of researchers, research designs and demands, social and opportunity costs among others. The knowledge of how volunteers perceive and experience participation in clinical trials is however lacking.

In spite of the changing clinical research landscape, barriers cited in past study continue to linger on to the present. Menezes et al., (2015) found barriers to PLHIV participating HIV clinical trials to include fear of disrupting current medication regimen, failure to receive information about the trial from provider, fear of confidentiality being compromised, invasive procedures, inadequate incentives and scheduling.

Kadam et al., (2016) in a study conducted in India have also reported challenges that have to do with complexity of study protocol, lack of awareness about clinical trials in patients and sociocultural issues related to be some of the factors that affect trial participation. While these studies can adequately inform on the important concerns relating to recruitment and enrolment of participants, some of them are limited in scope as issues concerning participation in drug trials majorly focus on the under-representation of specific demographic populations including women, people of color, and injecting drug users with limited body of research on recruitment issues. In another study, Detoc et al., (2017) in their systematic review on barriers and motivators to volunteers participating in preventive vaccine trials: found barriers to include those relating to the individual such as fear of personal risks, opportunity costs such

as time while those relating to the research were protocol requirements, fear of unknown risks. These studies have suggested the need to quantify the extent of problems associated with volunteer participation in randomized clinical studies. Walsh and Sheridan (2016) in their review on factors affecting patient participation in Ireland have highlighted a number of factors that included personal gain, research process, communication, altruism, demographics and costs.

Although there exists vast literature on barriers and facilitators into clinical research participation, there is paucity of knowledge on how social issues, such as those related to volunteers' perceptions and experiences of participation through various levels of clinical research impact on individuals' decision-making as well as research implementation. This limitation may, partly be attributed to the methodological approaches used to collect data. The extents to which individuals' characteristics are, for instance, likely to impact on their experiences are unknown in qualitative specific studies (Tarimo, 2011). Roberts et al., (2006), in their study, on *Perspectives on Medical Research Involving Men in Schizophrenia and HIV-Related Protocols*, have argued for further work that can allow for generalizability of these results and their potential significance. Of importance also has been lack of a conceptual framework to show how various factors interact to influence an individual's perception and experiences in clinical research participation (Lau et al., 2011).

Lau et al., (2011) posits that clinical research occurs within a context where biomedical science and social issues are interwoven. And because of this interlink there must be efforts to conduct behavioral social science research and biomedical science concurrently in order to identify barriers to research implementation. In the recent past, the field of biomedical research has witnessed growing appreciation of the role of social science in clinical research as it encompasses the study of human behavior and relationships. Although it focuses on the more subjective aspects of human life and interactions than say virology or immunology, social science research can include behavioral, health policy, and health systems research, as well as social epidemiology (IAVI, 2015). It is therefore not only important in unearthing critical social, behavioral issues on the communities and volunteers under study but also for continuous evaluation of concerns and experiences that affect volunteers. Like other sciences, its objective is to establish a body of demonstrable, replicable facts and theory that contributes to knowledge and to the understanding of human problems.

This study applied a mixed method approach, with the qualitative aspect anchoring in the phenomenological theory and approach as advanced by Husserl (2001). Phenomenological theory seeks to understand a phenomenon through the actors in the situation. An exploration of individuals' perceptions and experiences on clinical research is important for improving the conduct of research but also ultimately on volunteer participation experiences in clinical research for optimal enrollment and completion. Over and above this understanding, an important element is to discern the factors that influence decision making among volunteers to participate in research trials.

2.4 Theoretical Frameworks

To understand how volunteers' perceptions and experiences of participation in clinical research influence their decision making to participate in any given clinical research, this study employs a phenomenological approach advanced by Husserl (2001) that provides a basis for understanding peoples' lived experiences and the meanings they attach on those experiences.

2.4.1 Phenomenological Theory

Phenomenology is both a discipline in philosophy and a movement in the history of philosophy. The emergence of phenomenology as a philosophical research tradition goes back in the early part of the 20th century following works by founding philosophers who discussed human experience as a starting point for philosophy (Todres & Holloway, 2006). As a discipline, phenomenology is a study of structures of experience or consciousness from the first-person perspective. This is due to a paradigm of personal knowledge and subjectivity, and lays emphasis on the importance of personal perspectives and interpretation. Lopez &Wills (2004) and others consider phenomenology as a philosophical discipline and a research method. The Webster Collegiate Dictionary (Mish, 2002), has defined phenomenology as: (*a) a study of the development of human consciousness and self-awareness as a preface to philosophy. (b) a philosophical movement that describes the formal structure of objects of awareness and awareness of itself in abstraction from any claims concerning existence. (c) the typological classification of a phenomena; (d) an analysis produced by phenomenological investigation.*

From a broad perspective, the purpose of phenomenology is to describe particular phenomena, or the appearance of things, as lived experience (Speziale & Carpenter, 2007). Lived experiences are drawn from immediate consciousness of life's events as they occur prior to re-

flection and without interpretation and are influenced by those things that are internal or external to them. Lived experience, gives meaning to each individual's perception on a particular phenomenon and thus present to the individual what is true or real in his or her life (Giorgi, 1997).

The major aim of phenomenological philosophy is to develop a greater understanding of individuals' experiences through the consciousness of the experiencer (Giorgi, 2009). The phenomenological approach is a powerful tool in providing understanding to subjective experiences, gaining insights into people's motivations, actions and insights into the meanings that individuals attach to their experiences. As a philosophy, phenomenology has over the years gained recognition and contributed to shedding light on previously ignored human experience, reformulated philosophical questions and gaining entry into other fields of scholarship (Tymieniecka, 2003). The approach is in the nursing field where it has helped shape understanding of human phenomena such as caring, healing, and wholeness as experienced by individuals who have lived through them.

The Encyclopedia of Phenomenology (Embree, 1997) advances seven distinctive perspectives of phenomenology: *(a) descriptive phenomenology, (b) naturalistic phenomenology, (c) existential phenomenology (d) generative phenomenology, (e) genetic phenomenology, (f) hermeneutic (interpretive) phenomenology and (g) realistic phenomenology.* Of the seven, the descriptive and hermeneutic approaches have gained prominence in phenomenological investigations.

This study adopted the descriptive phenomenology as advanced by Husserl (1859-1938) and more recently by Amadeo Giorgi (2009). It is concerned with how objects, form in pure consciousness (transcendental) setting aside questions and assumptions of any relation to the natural world around us. In his recognition of consciousness as conditional of all human experience, Husserl sought to explain how to overcome personal prejudices that may stand in the way of one's ability to attaining a state of pure consciousness. An important principle of the Husserlian approach to science, is the belief that the meaning of lived experiences may be unraveled through one to one engagement thus the researcher and the object of research. For this to occur there has to be attentive listening, interaction, and observation in order to create representation of the reality free from previous knowledge (Husserl, 1929).

In advancing his ideals in phenomenology, in 1931 Husserl yet again introduced an ideal of transcendental subjectivity. In this work, he strove to provide a more systematic view of the role of subjectivity in constituting both theoretical assertions as well as the vital role played by perception in instituting how objects and meanings arise in "intuitive" acts of self-actualization. Transcendental subjectivity according to Tymieniecka (2003) employs the process of bracketing that involves a conscious attempt of removing oneself away from prior experiential knowledge and personal bias in order not to influence the depiction of a given phenomenon. The approach attempts to provide a neutral ground for the researcher to understand volunteers' experiences without having undue influence. In his arguments, he presented bracketing as a possible means to gaining insights into common elements of any lived experience. In this sense, the researcher puts aside their own considerations and gives prominence to those of the research subject. In his last principle, he argued that human beings are free agents responsible for influencing their own environment, contrary to the belief that the environment influences lived experiences and individual freedom. While phenomenology is a complex philosophical tradition, as a method of inquiry it provides good grounds for understanding volunteers' perceptions and experiences of clinical research participation.

In order to understand the various factors that come into play to influence an individual's perception and experience of an event or occurrence such as that of clinical research participation this study adopted the conceptual framework developed by Lau et al., (2011). The framework aims at helping researchers identify and address issues arising before, during and after an HIV vaccine trial from a behavioral–social and HIV vaccine clinical research point. The framework builds on previous models and frameworks to identify target areas for proactive integration of behavioral social science research (BSSR) into future trials. It represents multiple factors whose underlying relationships need explanations, through extensive additional research such as human experiences and decision-making.

2.5 Conceptual framework

This study utilised the conceptual framework for behavioural and social science in HIV- vaccine research by Lau et al., (2011) in order to understand the connectedness of various aspects of clinical research in shaping individuals' experiences and decision making. The understanding of the social behavioural issues in HIV- clinical research remains important in informing the conduct of success of clinical research studies. Although past HIV vaccine research studies have shown consideration for the social behavioural issues, these attempts

have been independent of the clinical research process. In order to bridge the inherent social science and HIV Clinical research gap, the framework proposed by Lau and colleagues provides a systematic approach to understanding social behavioural issues within the context and course of HIV vaccine development and implementation. The framework emphasizes the intersection between broader social and contextual factors with the science driven process experienced by individual trial participants and researchers. According to this framework there are several factors that may have a bearing on how an individual is likely to perceive clinical research participation and how their overall experience is likely to impact on their decision making.

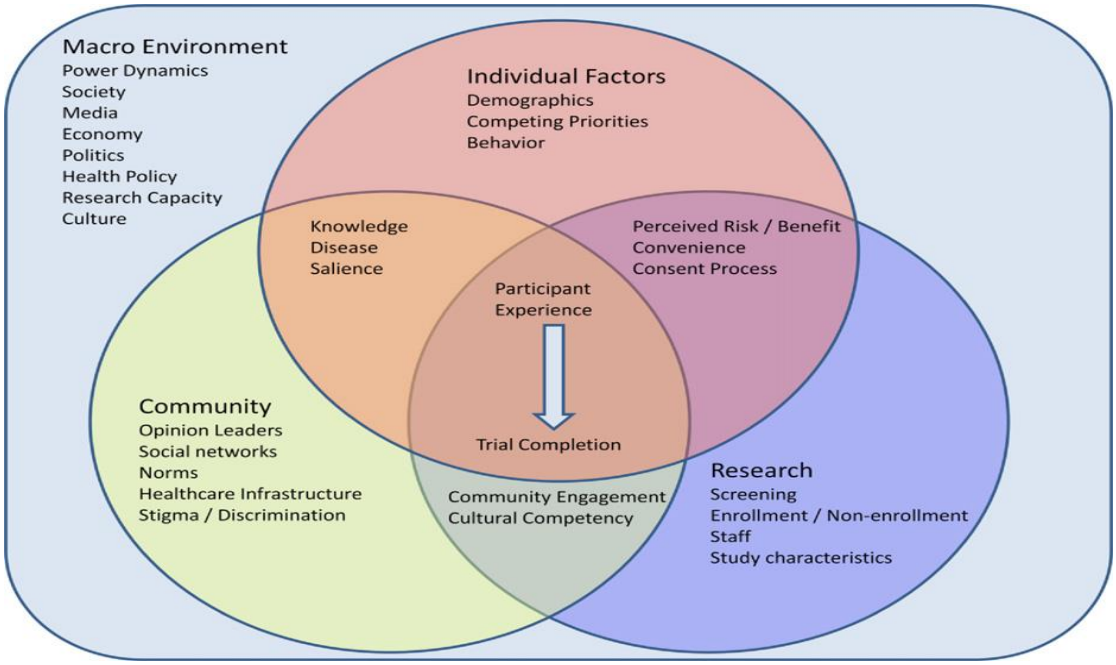


***Figure 1**: Conceptual framework adopted from Lau et al (2011)*

The framework recognizes that although participation in HIV vaccine trials is an individual endeavour, there are multiple levels of influence that impact on a volunteer's behaviour and decision making to participate or not to participate in a given trial. The key components relating to the framework and how they interact to influence participants' experience and trial completion are as follows:

i. Macro-environment (power dynamics, society, culture, economic factors, community). At the macro-environment level, there are a number of elements that have potential of influencing the research environment and participation. These elements range from the

existing and changing policy climate, influence of institutional officials and scientific opinion leaders on the research agenda; shifting power dynamics amongst individual and institutional stakeholders; cultural factors; media and access to information; health policy and its influence on access to health services; economy and how it affects access and demand of various services and basic needs; research capacity.

ii. Individual Factors: At individual level the framework consider aspects such as demographic factors, motivators and barriers to clinical trial participation such as competing priorities and behaviours.

iii. Research: Broadly this component considers aspect of trial implementation that include: recruitment, retention/ attrition, social harms, sexual risk, monitoring and risk compensation as well a range of ethical and human rights issues such as discrimination; cultural competency of investigators and clinical sites staff

iv. Community: community related aspects take into consideration social norms and networks; opinion leaders; existing healthcare infrastructure; stigma and discrimination.

In addition to factors identified above this study will strive to explore if there are other factors that are likely to influence how individuals perceive clinical research participation and potential impact on overall experience.

2.6 Operational Framework

In order to understand how volunteers' perceptions and experiences based on the above conceptual framework, an operational framework was developed. The operational framework shows the various levels of trials participation with an aim of understanding how volunteers perceive and experience their participation and decision making.

For a systematic approach towards understanding volunteers' experiences through various stages of participation, participation was divided into four distinct level that included (i) Recruitment phase (ii) Screening (iii) Consenting and enrolment/ non- enrolment (iv) Actual Participation and completion. These are described in *figure 2* below.

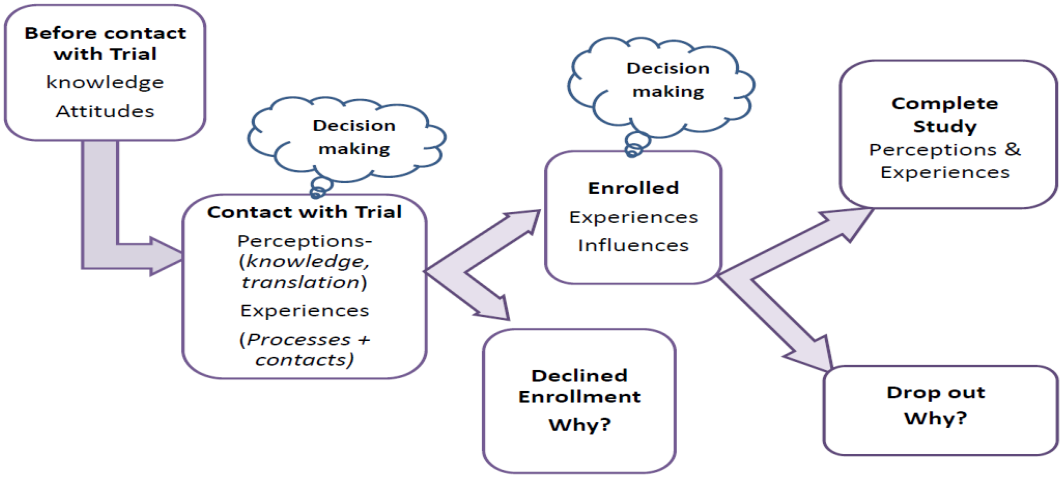


Figure 2: Operational framework

Besides, providing a guided means to exploring volunteers' experiences it also provided insights into the key enablers for decision making patterns that occur through the various stages of participation.

CHAPTER THREE
METHODS

3.0 Introduction

This chapter gives a detailed description of the methodology adopted for this study. Section 3.1 describes the research design. Section 3.2 provides study context. Section 3.3 gives background to KAVI –ICR HIV Clinical research. Section 3.4 description to selected KAVI-ICR studies, Section 3.5 provides study population; Section 3.6 sampling procedures; 3.7 data collection methods; Section 3.8 ethical considerations; Section3.9 provides data collection process; Section 3.10 provides data management procedures while section 3.11 gives details on data management and analysis.

3.1 Research Design

This was a mixed method phenomenological research study that applied a descriptive phenomenological research design as espoused by Husserl (1859-1938) and advanced by Giorgi (2009). The aim of this study was to examine KAVI –ICR clinical research volunteers' perceptions and experiences through various stages of research participation and their influences on decision making for clinical research participation.

Mixed methods phenomenological research (MMPR)

The application of mixed methods phenomenological research has gained roots within the scope of mixed methods research (Greene et al., 1989; Creswell, 2003; Tashakkori & Teddlie, 2003). Mixed methods phenomenological research (MMPR), is '*research that combines phenomenological methods with methods grounded in an alternative paradigm within a single the study"* (Mayoh & Onwuegbuzie, 2012). The aims of the mixed methods phenomenological research (MMPR) are to provide an understanding the essence of a phenomenon by examining the views of people who have experienced a given phenomenon.

Phenomenological inquiry falls into two major streams namely: descriptive (eidetic) phenomenology that draws heavily from the works of Edmund Husserl (1859-1938) and the later advancements by Giorgi (1985, 2005) and interpretive (hermeneutic) phenomenology that draws from Martin Heidegger's works (1889-1976) and later advanced by Max Van Manen. These two movements have continued to determine the direction of phenomenological research.

The general belief among descriptive phenomenologist researchers (Todres & Holloway, 2006) is that, each lived experience has a 'descriptive emphasis' or features that define a phenomenon holistically. Spiegelberg (1975) has defined descriptive phenomenology as 'direct exploration, analysis and description of a particular phenomenon, as free as possible from unexamined presuppositions, aiming at maximum intuitive presentation'. Essentially, descriptive phenomenology focuses on the descriptions of participants' individual experiences (Creswell, 2007). As a method descriptive phenomenology, there are four characteristics to phenomenological inquiry according to Giorgi (2009). The first characteristic dwells on intentionality while the second is that of the research being initially descriptive. The third characteristic is the application of phenomenological reduction where the researcher is expected to bracket their past knowledge of the phenomena under study and applying an impartial role. The fourth characteristic considers the *essence* of what constitutes the phenomena and the structure it takes (Holloway & Todres, 2003) through description of the common themes emerging from the experience that identify the phenomenon and beyond the experiences of different individuals.

In this study, three models for implementation of mixed method phenomenological research, as suggested by Onwuegbuzie, and Turner (2007) were applied. The models dwell on prominence given to methodology type as outlined below

i. Equal status mixed research whereby equal prominence is given to both the qualitative and quantitative components;
ii. Qualitative dominant mixed research, that gives prominence to the qualitative element (in this case phenomenology);
iii. Quantitative dominant mixed research, where prominence is to the quantitative element (in this case the complementary method).

Priority decision is always a major consideration in the implementation of mixed methods studies as the predominant methodological component and the sequence of data collection is determined in advance. According to Morgan (1998), and is best achieved, by making two basic decisions: priority and sequence. Although available literature on mixed methods shows a common orientation from qualitative to quantitative, the same does not apply to the Mixed Methods Phenomenological (MMPR) where the quan –PHEN are qualitatively driven (Mayoh & Onwuegbuzie, 2013). The initial quan-qual phase was used to orientate the predominant PHEN stage to the most relevant and interesting phenomenon. Mayoh et al.,

(2012), in their study on the experiences of U.K. adults with chronic health conditions seeking health information online; a preliminary quantitative phase was used to orientate the study with a dominant descriptive phenomenological second stage. They argued for the benefits of mixed methods approach and the relevance of orientation in phenomenological studies in ensuring the capture of the most relevant and interesting phenomenon and providing for a more comprehensive discussion of results.

3.2 Study Context

3.2.1 Nairobi County Demographic, Political and social-economic context

Nairobi is Kenya's Capital City a home to over 3 million people (KNBS 2010). Like many cities in sub-Saharan Africa, Nairobi has experienced rapid urbanization and population explosion that has led to the proliferation of informal settlements that harbor between 60 and 70 per cent of the urban residents (NCSS 2012, APHRC report). Nairobi province falls into three district administrative units namely Nairobi West, Nairobi North and Nairobi East as shown in the map below *Figure 3.*

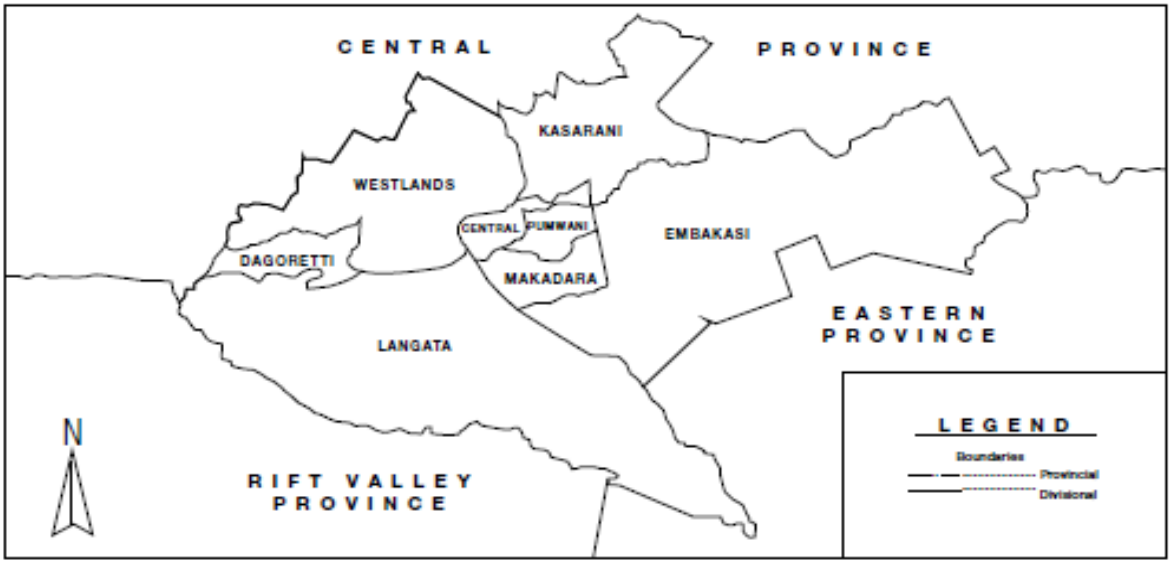


Figure 3: Nairobi County

This study was conducted in Nairobi- Kenya at the KAVI-Institute of Clinical Research (KAVI-ICR) trial sites in Nairobi Kenya. These are KAVI-KNH situated at University of Nairobi, School of Medicine within the Kenyatta National Hospital and the KAVI-Kangemi at the Kangemi City Council Clinic. The Kangemi site is a satellite centre constructed at Kangemi Health Centre, in Kangemi slum within Nairobi's Westlands sub- county. The Kangemi slum borders to the north upper middle- class neighborhoods of Loresho and Westlands

to the west. To the south it boarders Kawangware, a peri-urban setting in Dagoretti sub-county while it's eastern border connects to Mountain View, another upper middle class population.

3.2.2 Nairobi County Health Service Delivery

Two arms of government manage health service delivery in Nairobi County. These are the Ministry of Local Government through the City Council of Nairobi (NCC), and the Ministry of Health. Most public health facilities in Nairobi are health centres managed by Nairobi County. The facilities mainly serve the population living in the slums and offer integrated SRH to young people. Health centres in Nairobi have previously had youth programmes supported by donor agencies such as UNFPA and Pathfinder International. Through the department of public health, the Nairobi County provides preventive, promotive, curative and rehabilitative health services to city residents (NCC 2010).

3.3 Background to KAVI-ICR HIV Clinical Research

The KAVI-Institute of Clinical Research (KAVI-ICR), University of Nairobi, was established in 1999 by local researchers through funding from the International AIDS Vaccine Initiative (IAVI) and the Medical Research Council (MRC) Human Immunology Unit at Oxford University. KAVI – Institute of Clinical Research (KAVI-ICR) formerly Kenya AIDS Vaccine Initiative (KAVI), was initially established as a unit within the Department of Medical Microbiology. Over the years, through collaborations with other institutions of higher learning and research such as University of Manitoba and University of Washington, KAVI-ICR has built and strengthened its human capacity for research and scope

The institute has two trial centres from where runs it activities namely- KNH Trial site that is housed at University of Nairobi, School of Medicine at the Kenyatta National Hospital. There is also the Kangemi Trial site housed within the Kangemi City County Health facilities.
Both trials sites have dedicated teams that handle various aspects of clinical research implementation. These include

1. Community team that comprises of community nurses charged with community engagement activities, recruitment and follow-up of volunteers. At the community, this team works with peer educators and the community advisory boards (CABS).
2. Clinic team: this comprises of study PIs/clinical doctors, clinical officers and nurse counsellors. This team handles the clinical aspects of research

3. Laboratory team: comprises of laboratory scientists and technicians and handles the collection of various samples and processing
4. Data/IT: Besides offering IT support, the team handles clinical data, entry and storage
5. The Administration: that comprises of management, finance and support staff.

Since its inception KAVI-ICR has conducted several Phase 1 HIV Vaccine Trials, Observation studies, one drug study (PrEP) and several studies are underway. Non HIV-vaccine related trials such as Ebola have also, recently been conducted.

3.4 Description of the selected KAVI-ICR research studies

In this section of the thesis, I give a description of the studies/trials that informed that were this for study with an aim of providing the reader an understanding of the involvement volunteers, commonly referred to as human subjects in clinical research. Six KAVI-ICR studies that include four vaccine trials, one drug trial and an observation study are therefore described below:-

***B002*:** This was an IAVI phase 1 double-blinded, placebo-controlled, randomized trial in HIV un-infected healthy adult volunteers, conducted at the KAVI- KNH trial site. Its aim was to evaluate the safety and immune responses generated by the two vaccines F4co adjuvanted with AS01B or AS01E administered with Ad35-GRIN. The F4co is a protein vaccine combined with a substance called an "adjuvant" that is designed to increase or activate the body's immune response. The study targeted healthy males and females aged 18-40 years. Its requirements included HIV testing, risk reduction counseling, maintain low risk, use non- barrier method of contraception to avoid pregnancy for up-to 4 months period, consistency in condom use for males to prevent impregnation of partner for up-to 4 months, forgo donation of blood/ tissue for the period, passing the Assessment of Understanding (AOU) the informed consent. They had to be willing to be in the study for up-to 16 months. The samples needed for this trial were blood, urine and sputum. This study had a number of procedures as summarized in the *table 1* below

Table 1: Study Procedures

Screening Visit (2hours)
1. Receive information, go through assessment of understanding
2. Sign informed consent if willing to join
3. Receive a complete medical examination, answer questions about general health and sexual practices
4. HIV test Counseling and testing
5. Test for Hepatitis B&C and other STIs
6. A chest XC-Ray and sputum test to rule Active TB
7. Kidney function test by use of urine
8. Pregnancy test for women
9. Eye examination

Upon randomization, the participants were to receive one injection at each of the three vaccination visits (3 injections). There were three visits after each vaccination to evaluate vaccine reaction and any unanticipated symptoms. *Table 2* below gives details of the amounts of blood collected from the participants during various study visits as per the groups assigned.

Table 2*: Blood sample collection schedule*

Visit	**Group A&B**	**Group C**	**Group D**
Screening Visit	36mL(3 ½Tbs)	36mL(3 ½Tbs)	36mL(3 ½Tbs)
At 3Visits	110mL(11Tbs)	110 (11Tbs)	110(11Tbs)
At 1 visit	106ml (10.5Tbs)	104mL (10.5Tbs))	106mL(10.5Tbs)
At 1visit	100mL(10Tbs)	100mL(10Tbs)	20mL(2Tbs)
At 1visit	80mL(8Tbs)	20mL (2Tbs)	14mL (1 ½Tbs)
At 2 visits	20mL (2Tbs)	14mL (1.5Tbs)	6mL (½Tbs)
At 3 visits	14mL (1½Tbs)	6mL (½Tbs)	-
At 1visit	6mL (½Tbs)	-	-
Total Amounts	472 ML	390 ML	292

B003: This was a phase 1 double-blinded, placebo-controlled, randomized trial in HIV un-infected, healthy adult volunteers. The study took place in multiple sites that included USA-Boston, Massachusetts, South Africa and Kenya. In Kenya, the trial was conducted at the KAVI- ICR Kangemi trial site. Its aim was to evaluate the safety and immune response generated by the two vaccines Ad26-ENVA and Ad35-ENV. It targeted healthy males and females aged 18-49 years with requirements being similar to those of B002.

- Samples collected were blood and urine.
- Study duration of 20 months including 4 months post vaccine follow-up with up to 13

visits to the trial site.

The various procedures are contained in *table 3* below.

Table 3: Study Procedures

Screening Visit (2hours)	**Study Visit Procedures (after enrolment)**
1. Receive information, go through assessment of understanding	HIV counseling and testing and risk reduction
2. Sign informed consent if willing to join	Urinalysis
3. Receive a complete medical examination, answer questions about general health and sexual practices	Collection of throat swabs and urine specimens for viral shedding valuation
4. HIV test Counseling and testing	Collection of blood samples
5. Test for Hepatitis B&C and other STIs	
6. A chest XC-Ray and sputum test to rule Active TB	
7. Kidney function test by use of urine	
8. Pregnancy test for women	
9. Family planning counselling and Adoption of / Receive a method of contraception	

In this study, there were 11 visits and blood samples collected as shown in *table 4* below.

Table 4: Blood sample collection schedule

Visit	**Amount**
Screening Visit	36mL(3 ½Tbs)
At 11Visits	100mL(6 ½ Tbs)

Protocol J: This was a prospective, observational multi-centre study conducted at the KAVI-KNH trial site. It aimed at evaluating the immunological markers of exposure in HIV –Exposed Seronegative (ESN) volunteers. Its objectives were- i). to assess the immune response in ESN volunteers and to compare it to a group of volunteers with lower risk of exposure to HIV infection and a group of HIV sero-positive volunteers, ii). to assess the feasibility of mucosal sampling methods in an African setting, iii). To identify genetic or other characteristics of the immune response in ESN which provide insights into developing better HIV vaccines. This study had three categories of participants with different requirements as outlined in *table 5* below:-

Table 5: Description of Target Population

Target Population	Description
Group A: 50 ESN male and females 18-45 years	These enrolled from other studies. HIV seronegative while enrolled in incidence cohorts for at least 3 months, multiple possible exposures to HIV in the last 3 months. Pregnancy test for women
Group B: 50 lower-risk males and females 18-45 years	These were identified at screening from other studies, HIV –uninfected, low risk to infection (one sexual partner/ no sexual activity), non- injection drug use, no history for STI in last 12 months preceding the study. Willing to have HIV test, pregnancy test for women
Group C: HIV sero-positive volunteers male and females 18-45 years	Participants' recruitment was from various sources. They were HIV seropositive, in general good health, with CD4 cell count≥ 400, not on ART, pregnancy test for women, able and willing to provide adequate contact and locator information.

All the participants had to be willing to provide adequate contact and locator information for follow-ups. The participants were also required to provide various samples for various tests and clinical evaluation and this included blood, urine and mucosal samples. *Table 6* below gives a summary of procedures and blood samples collected during the various study visits.

Table 6: Procedures and Blood sample collection

No of Study Visits and Time required	**Procedures**	**Samples Required**	**Amounts**
Screening Visit – 3 hours	• Screening for understanding • Pre-HIV test counseling • HIV test and results • Pregnancy Test	Blood Urine	
Enrolment Visit (Month 0)- 2 hours	• Complete physical examination • Genital/Pelvic and rectal exam • Genital/rectal swabs • Rectal Biopsies • Testing for STIs • Behavioral and sexual activity screening	Blood Urine	70-100ml (approx.5-7 Tbs)
Months 1-3 and any additional follow-up within 24 months of enrolment	• Behavioral and sexual activity screening • Rectal Biopsies	Blood	50-100ml (approx. 3.5-7 Tbs)

Month 4 and 1 month after final supplemental visit	Behavioral and sexual activity	Blood	8ml(about ½ Tbs)

Clinical examinations for all categories included rectal exam (males) pelvic exam (female) and STI, Blood and urine, semen, mucosal (1 - day sexual abstinence after sampling) including a 25 months follow-up period as detailed in *table 7* below

Table 7: *Mucosal samples collected*

Type of sample/ site	**Pre/ post Collection Conditions**	**Method of collection**
Saliva	No eating or drinking anything except water 30minutes before	Spit into a tube
Cervical/ Vaginal	Avoid sex day before	• Soft-cup (in place 5 minutes) • Sponge placed in cervix area for a few minutes • Aspirator
Rectal (M/F)	• Anema to clean the rectum • For biopsy return to clinic 1-2 days after for healing evaluation • Abstain from anal sex till healed • Use lubricants and condoms in case of anal sex after biopsy	• Sponge placed in rectum a few minutes • Biopsy upto10 samples size of uncooked rice grains collected from rectum wall.
Semen	Avoid sex day before collection	Through Masturbation

Pre-Exposure Prophylaxis (PrEP Study: This was a pilot study that evaluated the safety, acceptability and adherence of the PrEP drug emtricitabine/tenofovir disoproxil fumarate (FTC/TDF) among the at-risk populations in Kenya. Study participants were healthy, HIV-uninfected men having sex with (MSM) adults of 18-49 years of age, at risk for HIV, willing to undergo HIV testing, counseling and receive HIV test results. Tests include STI screening, consisting of a history of STI symptoms, an ano-genital exam, blood test for syphilis, collection of urine specimen for gonorrhea and chlamydia testing and, for males, collection of a rectal swab for gonorrhea as shown in *table 8* below

Table 8: Visits procedures and tests

Screening Visit (2hours)	**Study Visit Procedures (after enrolment)**
Go through assessment of understanding	HIV Counseling and testing/ risk reduction
Provide informed consent	Testing the level of study drug in the blood
Receive a complete medical examination, answer questions about general health and sexual practices	Test body response to drug
HIV test Counseling and testing	Test amount study drug in the body using sample of hair
Test for Hepatitis B&C and other STIs	Complete medical examination at final visit
Anal swab to check for STIs	
Kidney function test by use of urine	

Blood samples, were collected as per the *table 9* below.

Table 9: Blood samples collection schedules

No of Study Visits and Time required	**Amounts**
Screening Visit – 2 hours	20mls (approx. 1 ½TbS)
Enrolment Visit, week 8&16	65 mls (4 ½ Tbs)
A week 4, 4+24 hours (day 29) and week 12 visits	32mls(approx. 2Tbs)
Follow visits (for HIV infected during study)	70mL (5Tbs)

S001 (SENDAI) This was a phase 1 double blind, randomized, placebo-controlled, dose-escalated trial conducted at the KAVI-KNH trial site. The trial aimed at evaluating the safety of Sendai HIV vaccine SeV-G (NP) intra-nasally and Ad35-GRIN administered intramuscularly (via injection into one of the arm muscles with a needle) in prime –boost regimes. The Sendai vaccine is made out of a Sendai virus. In nature, the Sendai virus is common in mice and other small animals. It may grow in the human body for some days but does not cause disease. The study vaccine SeV-G (NP) is made from a weakened and modified Sendai virus that contains manmade HIV genetic material. Ad35-GRIN, is made out of modified adenovirus serotype 35 (Ad35). Although in nature adenoviruses are common and can cause mild colds and respiratory infections with people recovering naturally, the Ad35 used here, is modified to prevent it from growing in the body. The modified virus helps deliver the artificially made HIV genetic material to the body cells.

Duration: This was 16 months long study

Trial sites other than KAVI were in St. Stephens's AIDS Trust, London, and Project San Francisco in Kigali Rwanda

Sample size Approximately 64 volunteers (48 vaccines and 16 placebos) who met eligibility criteria were included in the study, 22 volunteers of these were from the Kenya site.

Target Population and eligibility: HIV-uninfected, healthy adult male and female volunteers in the age bracket 18-50, who did not report high-risk behavior for HIV infection, were willing to undergo an HIV test, and use an effective method of contraception.

Table 10 below shows the various study procedures performed.

Table 10: Study Procedures

Screening Visit (2hours)	**Study Visit Procedures (after enrolment)**
Assessment of understanding and Informed consent	2 vaccinations 4 months apart
Complete physical examination and questioning about general health, medical history and sexual behavior	Pregnancy test before every vaccination
HIV counseling and testing	Continuous health monitoring
Screening for Hepatitis C, Syphilis and other health conditions	HIV counseling and testing
For women pregnancy tests	Orientation into use of memory aid
For women Family planning counseling and adoption if not on one	

Additionally, the volunteers were to give blood samples at various intervals as shown in *Table 11* below

Table 11: Blood samples

No of Study Visits and Time required	**Amounts**
Screening Visit – 2 hours	18mls (approx. 1 ¼ TbS)
At 3 visits	100mls (10 Tbs)
At 6 visits	92mL(9Tbs)
At 2 visits	26mL (2 ½ Tbs)

Volunteers enrolled into groups B, C and D, were required to give mucosal samples at nine separate visits upon separate consent. Details of types of samples are contained in the *table 12* below

Table 12: Types of mucosal samples collected

Type of sample/ site	**Pre/ post Collection Conditions**	**Method of collection**
Saliva	No eating or drinking anything except water 30 minutes before	Spit into a tube
Nasopharyngeal secretions		Placing a thin strip or swab inside the nasal passage
Cervico-vaginal secretions	Avoid sex day before collection	• Soft-cup (in place 1 hour) • Sponge placed in cervix area for a few minutes for non IUD users • Aspirator for non IUD users
Colon-rectal biopsies (M)	Anema to clean the rectum	Sponge placed in rectum a few minutes Biopsies
Semen	Avoid sex day before collection	Through Masturbation

HIV-CORE 004: This was a phase 1/2a clinical trial of universal HIV-1 vaccines pSG2.HIV consv, DNA, MVA.HIV consv and ChAd63. HIV consv in combined regimens was administered to healthy HIV -1/2 – negative adults in Nairobi. It aimed at evaluating the safety and tolerability of candidate HIV-1 vaccines pSG2. HIVconsv DNA, ChAdV63.HIV consv was administered intramuscularly as part of heterologous prime-boost regimes. It additionally evaluated the magnitude, specificity and quality of HIV-1-specific T cell responses after administration of pSG2.HIV cons DNA, ChADV63.HIVconsv and MVA consv vaccines in heterologous prime-boost regimes.

Target population was made of healthy males and females at low risk of HIV-infection, aged between 18 years and no greater than 50 years by the time of first of vaccination. Inclusion criteria included:- i). willingness to undergo HIV-1 testing, HIV-1 counselling and receive HIV-1 test results ii). if sexually active female- using an effective method of contraception (e.g. hormonal contraception, diaphragm, intra-uterine device (IUD), condoms, anatomical sterility in self or partner) from14 days prior to the first vaccination until at least 6 weeks after the last vaccination iii. all female volunteers must be willing to undergo urine pregnancy tests at time points specified in the Schedule of Procedures; iv). If sexually active male; willing to use an effective method of contraception (condoms; anatomical sterility in self or partner) from the day of the first vaccination until 6 weeks after the last vaccination and willing to forgo donating blood during the study. Specimens to be collected were blood and urine.

This trial aimed at recruiting 48 volunteers in two stages.

Stage 1. In the first stage, 24 volunteers were recruited to receive three doses of 4 mg of pSG2.HIVconsv DNA (20 volunteers) or placebo (4 volunteers) followed by a boost with 1.2 x 10^9 IU of ChAdV63. HIVconsv or placebo respectively and a second boost with $2x10^8$ pfu of MVA. HIV consv or placebo (DDDCM; n=20, PPPPP; n=4). The study duration for this group was 36 weeks.

Stage 2 The next 24 volunteers were to receive 1.2 x 10^9 IU of ChAdV63.HIVconsv (20 volunteers) or placebo (4 volunteers) followed by boost with $2x10^8$ pfu of MVA. HIVconsv or placebo respectively (CM; n=24, PP; n=4). The study duration for this group was 24 weeks

The study duration was 19 months (from screening of first volunteer to 5 months after last immunization of last volunteer approximately The volunteers were expected to make four visits to the trial site (screening visit, vaccination visit, and follow-up visit, final visit/early termination visits). Blood samples were collected at various points as shown in *table 13* below.

*Table 13**:** Blood Samples collected*

Amount	Tests run were
Between 40-100mL (4-10 Tbs at each visit (on average 6 Tbs) making 720mL over a period of 6months	• Immune response to drug • Tissue type (blood group) • Check health status (blood count, liver and kidney • Future tests

Transport Reimbursements

A standard amount of Kshs. 1,000 was paid to participants for each of the scheduled appointments in respect to the time spent at the trial site and reimbursements for travel costs. Study participants agreeing to provide invasive colorectal samples were compensated an extra Kshs. 1,000 to cover the extended period in the study site.

The selection of the six studies was for a holistic understanding of how volunteers' experiences of participation across research (in this case vaccine, drug and observational studies) given their differences in requirements in order to draw lessons to inform future studies

3.5 Study Population

The participants for this study were at time study participants or had participated in previous studies (trials) at KAVI-ICR. The studies were clinical trials on HIV vaccines, drugs and an observation study. These were the B002, B003, S001, HIV CORE 004, PrEP and Protocol J studies.

The participants included - *i). those found to be eligible after screening and were enrolled and completed ii) those eligible for enrollment but declined iii) those enrolled but dropped before completion if any.* Additionally, interviewed were selected study staff and peer educators.

Eligibility Criteria

Inclusion Criteria: all participants who met the following criteria:

Able and willing to participate; those that attended the recruitment seminars, screened and found to be eligible but declined enrollment, current studies' participants, past participants that completed

Exclusion criteria: all participants

- less than 18 years
- who voluntarily declined to participate
- All those that had never attended KAVI-ICR information and recruitment seminars

3.6 Sampling procedures

Purposive sampling procedures were applied in this study, following the mixed sequential approach as provided by Teddlie (2007). Purposive sampling seeks to include the full spectrum of cases and reflect the diversity within a given population by including extreme or negative cases (Patton, 2002). The sample size varies depending on the breadth and complexity of the inquiry, although samples are generally smaller than those used in quantitative studies and studied intensively. Adequacy of a sample size is determined by the principle of thematic saturation. Thematic saturation refers to the point at which no new concepts emerge from the review of successive data from a sample that is diverse in pertinent characteristics and experiences (Glaser & Strauss, 1967, Strauss & Corbin, 1998; Morse 1995). Although it is not possible to define the number of participants in advance, a range of 20 to 30 interviews may achieve saturation.

In Mixed Methods sampling approaches, the selection of units or cases for a research study, involves the use of both probability sampling and purposive sampling strategies, which are key in increasing external validity and transferability (Collins, Onwuegbuzie, & Jiao, 2007). Systematic, scientifically proven methods for developing samples for qualitative and mixed-methods studies are well established (Patton, 2002). While quantitative sampling techniques rely on statistical probability theory, in contrast, qualitative sampling is based on purposive or theoretical sampling principles. The aim is to identify "information-rich" participants who have certain characteristics, detailed knowledge, or direct experience relevant to the phenomenon of interest (Pope and Mays, 1995; Hycner, 1999).

A sequential mixed methods sampling, was applied for this study through Quantitative-Qualitative (Phenomenology)-(QUAN-QUAL (Phen). In the Quan–Phen studies, preliminary quantitative data collection serves to feed into the interview schedule by providing orientation and help in identifying participants with best fit in providing information with rich experiential accounts for the phenomenological phase (Mayoh, 2012).

The applicability of this approach has been demonstrated in a number of studies that include Mayoh et al. (2012) who used quantitative at the initial phase to orientate a study with a dominant descriptive phenomenological second phase. In their study, they argued that all forms of phenomenology require an element of orientation in order to ensure that the most relevant and interesting phenomenon is selected for phenomenological research. They noted that this approach paved way for a more comprehensive discussion of the results, thus justifying their rationale for mixing based on reformed beliefs of complementarity in contrast to triangulation (Denzin, 1970). On the other hand, Dean et al. (2011) in their study of rural workers experiences of back pain used preliminary questionnaire battery prior to a phase of interpretive phenomenological approach (IPA). They concluded that besides the approach aiding in sample identification for the second stage, it also made it possible to use the findings from the first stage to tailor the phenomenological research questions for the second stage, while allowing for a more holistic joint discussion.

Two levels of sampling occurred in this study. The first level of sampling involved sampling out the studies/and trials of focus from the many KAVI-ICR studies that included past studies, the ongoing and those currently recruiting at the time of this study. The second level of sampling involved that of respondents drawn from the quantitative interviews that were will-

ing to provide a telephone contact to be follow up for and were willing that could respond to the qualitative tool.

Sampling for the specific studies

Purposive sampling was used to select the studies. At the time of writing the protocol for this study, KAVI-ICR had conducted up-to 10 Phase 1 - vaccine trials and several were on going or underway. Additionally, one (1) drug trial and a number of observational studies including epidemiological studies had been conducted. Taking into consideration the tracing of past volunteers and time factor in relation to individuals' abilities to recall events, studies that had recently been conducted and been completed, were ongoing or were at the time recruiting for enrolment were considered. There were three studies from each trial site. Two of the studies were HIV vaccine studies that were either ongoing or completed but on follow-up stage at the time. The remaining two studies were the non-vaccine and included PrEP study at the Kangemi trial site and Protocol J at KNH. The PrEP was the first and only drug study that was conducted at the KAVI-ICR. Selecting this study provided a unique opportunity to study a high-risk population comprising of MSM. The last one for the KNH trial site was the Protocol J, an observation study that comprised volunteers that were both high risk and low risk.

Sampling study Participants

The selection of study participants is the initial step in the data collection process. According to Giorgi (1997, 2009), there are four criteria for qualitative or quantitative scientific research in relation to the knowledge being obtained - Systematic, methodical, general, and critical.

i. Quantitative phase

In the QUAN phase of this study, all participants screened and found eligible for enrollment from the purposively selected studies as shown in *the table 1* above, were included for the survey questionnaire. Participants for this study were recruited from phase 1 trials, which by their nature attracted small numbers of participants of between 20-100 (as described on page 24). This therefore meant that since the overall total of participants from the 6 studies could not yield a population large enough to be subjected to a sampling frame, all participants were considered for the study. According to Somekh and Lewin (2005), social science research can focus on a specific population or complete set of units under study. A good example of collecting data from a complete set of unit is the census, where data is collected from all members of the population thus giving a true representation of the whole. Therefore, all partici-

pants falling within the study eligibility criteria and showing willingness to be in this study were consented interviewed for the survey questionnaire.

ii. Qualitative phase

Data collection for the qualitative phase followed the mixed methods phenomenological approach using a sequential approach where data was collected from 44 volunteers, purposively selected from the quantitative (QUON) phase. Efforts were made to ensure that only those that were eligible for enrolment (declined enrolment, enrolled and dropped, enrolled and completed study) were sampled as shown in the *figure 4 below*. This decision was reached by taking between 15% -20% of QUAN sample. Considerations for gender balance were taken into account, to ensure equal numbers of males and females. In addition, 8 key informant interviews (KIIs) was conducted among the study staff. This included at least 1 trial doctor, 2 nurse counselors and 2 community liaison officers /mobilizers from each trial site.

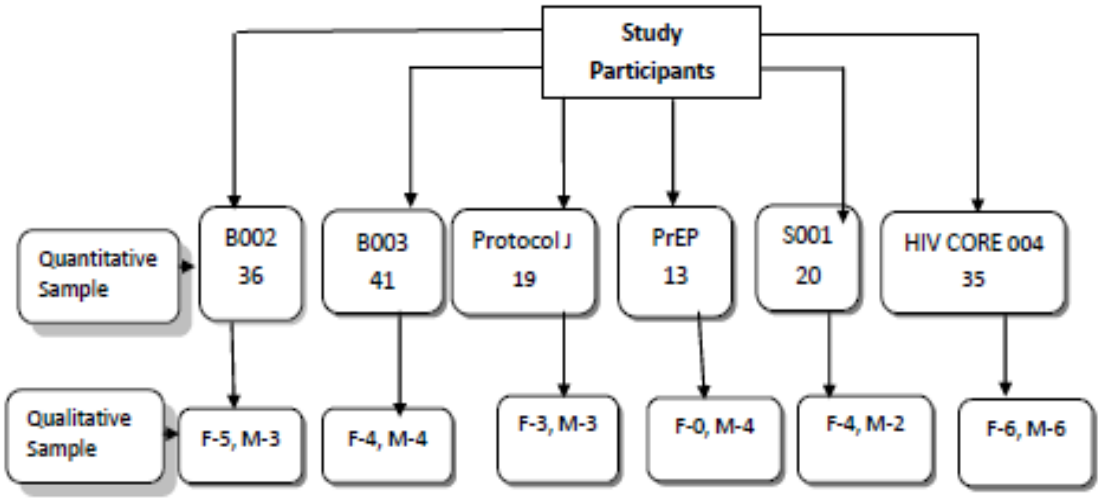


Figure 4: Sampling frame for the qualitative phase

The questionnaire looked at volunteers' characteristics, primarily socio-demographic, economic factors and information relating to their experiences and perceptions of various stages of research participation. The information generated from the QUAN phase served to inform the suitability of participants with particular characteristics for the QUAL (Phen) phase in addition to refining and strengthening the qualitative tool.

3.6.1 Volunteers Recruitment and Consenting Process

i. Study volunteers

Tracing and recruitment of study volunteers was with the help of KAVI-ICR staff. Upon receiving ethical clearance, with permission from the KAVI-ICR Director, meetings were held with the clinics' site managers to discuss the study goals and their roles in its implementation more so their support in making contacts with the intended study population. With the help of the site managers, I was able to make contacts with clinical staff that had been or were directly involved with the screening and enrolment of volunteers in the six studies. Like the site managers, I shared with them the study goals and the eligibility criteria for the volunteers I was aiming at for this study. What followed was a series of meetings to map out the implementation plan.

KAVI-ICR maintains a contact database for its past and current volunteers for easy of follow-up purposes. The help of community mobilizers and peer leaders attached to KAVI-ICR studies sought to help trace those that were unreachable. A snowball approach was applied in tracing and contacting the PrEP volunteers that comprised of the MSMs that are highly mobile and conceal their identity. Upon making contacts, a schedule for the interviews was prepared for those that had expressed willingness and availability. Although the volunteers had an option of being interviewed at places of their choice, they all opted to being interviewed at the KAVI-ICR trial sites. This was important for maintaining confidentiality and at the comfort and convenience of the volunteers. Upon meeting, volunteers were provided with all the necessary information to enable them to make informed decisions about participating in the research. All study volunteers were allowed to read/ be read to the informed consent document and their questions addressed as they emerged before signing the informed consent.

ii. Trial staff

Recruitment of study staff was with the help of site managers in this case KAVI-ICR KNH manager and KAVI-ICR Kangemi manager. With their help, the PI was able to draw a list of respondents. Their inclusion criterion considered their level of engagement with the studies of focus. Upon compiling the list, the PI made telephone calls or walked into their workstations to inquire of their availability. An interview schedule was prepared. All respondents were consented, and questions addressed before the signing of consent document.

3.7 Data collection methods

The main data collection methods included the following:

i. Review of literature
ii. Questionnaire
iii. In-depth interviews
iv. Key informant interviews

In order to accommodate less conversant and non – English speaking study volunteers, the informed consents, survey questionnaire and in -depth interview tools were translated into the Kiswahili language.

3.7.1 Review of literature

The literature review for this study was through search engines such as Google scholar, google search Mendeley and Hinari. Literature review was around participation in HIV clinical research, with focus on factors affecting individual participation more specifically recruitment, informed consent, samples, enrollment and retention in consistency with the study, following a literature review guide. These were research publications that included abstracts; peer reviewed published articles and other key documents. Through the literature review, the researcher was able to gain insights into other studies closely related to the problem under study. It helped provide a framework for establishing the relevance of the study as well as providing a point of reference for comparing results with other findings.

3.7.2 Questionnaire

A survey tool was used to collect numeric data from all consenting study participants. The tool was developed following review of existing literature on the study and in response to the study research questions and objectives. Individuals' socio- demographic and economic characteristics were collected. These included age, sex, education levels, occupation, marital status and income levels. Other forms of numeric data collected was in relation to their learning about KAVI, experiences with recruitment, consenting, screening and enrolment processes. Also asked were questions around consultation and decision-making. These were important in eliciting relationships/ associations between individuals' characteristics and experiences of participation and determinants of decision making. Other forms of data collected were on their perceptions and experiences of clinical research participation.

3.7.3 In-depth interviews

An in-depth interview guide was used to collect data from selected study participants in exploring their perceptions and experiences through various stages of clinical research participation. All participants received all necessary information regarding the study before consenting and eventual data collection. With permission from the study participants, all interviews were audio recorded and all field notes taken as appropriate. In-depth interviews elicited rich, detailed information on volunteers' clinical research participation experience from their own perspectives and further shading light on how these experiences shape decision making to participate in clinical research.

3.7.4 Key informant interviews

A key informant tool was used to collect information from selected study personnel on their views regarding volunteers' perceptions and experiences of clinical research participation. Also elicited, were further insights on how to improve on volunteers' experiences of research participation. Prior to data collection, all study participants were consented and permissions for recording the interviews sought accordingly.

3.8 Ethical Considerations

Ethical approval for this study was from the Kenyatta National Hospital Ethics Research Committee (KNH-ERC). For purposes of upholding ethical standards in research, the research team that included the researcher and the research assistants, went through the code of ethical conduct that included undertaking the online research ethics course. All study participants went through the consenting process having received information on the nature of the study, potential benefits and risks of participation. Participants had right to decline to participate as well as terminate participation at their own will. Interviews took place on receiving written consent. To observe participants' rights to confidentiality, all study transcripts had identifiers based on study type including attributes such as age, sex, marital status and occupation. All the information collected was secured for retrieval and processing.

A sum of Kenya shillings500 (equivalent of 5 dollars) was however given to each study participants (excluding trial staffs) after the interviews to cater for transport costs to and from the trial sites.

3.9 Data Collection

This section provides details on the data collection plan for this study. This includes information about recruitment of research assistants to support in the data collection and the pre-testing of research instruments before the commencement of the actual data collection.

The basic aim of collecting data in any given research is to gather information that speaks to the questions raised in the study. Within a mixed methods research, the data collection procedure consists of several key components such as sampling, gaining permissions, collecting data, recording the data and administering the data. Data collection is more than simply collecting data; but involves several interconnected steps. The descriptive phenomenological approach informed the data collection process.

3.9.1 Recruitment and training of Research Assistants

Five research assistants (3 males and 2 females), were recruited to support the data collection. Given the nature of the study with specific reference of the qualitative aspect, key qualifications included those with at least a Bachelor of Arts Degree (Sociology/Anthropology), minimum of two years research experience. The data person recruited had Higher Diploma in data management with relevant experience in processing both qualitative and quantitative data using Atlas *ti* and SPSS.

The research assistants were trained over a one-week period from 25th February to 3rd March 2014. The training took place at the KAVI-ICR trial site at the School of Medicine, Kenyatta Hospital. The objective of the training was to provide the research assistants with understanding in the following areas:

- Clinical research
- KAVI-ICR HIV Clinical trials
- Introduction to the Research Project and their roles
- Research Methods and their application
- Study Research Instruments
- Interviewing skills in phenomenological studies with emphasis on bracketing

Review of research instruments was on 28th February and the 3rd March 2014.

3.9.2 Pre-testing of research instruments

Before commencing of the data collection, the research tools were pre-tested. Pre-testing is an important component in the data collection process. Pre-testing or piloting entails taking "small-scale trial runs of all the procedures planned for use in the main study" (Monette et al., 2002). Within the context of social science research, pilot study occurs prior to the actual study to solicit feedback from a small number of respondents (normally convenient sample) in terms of understanding of the survey instrument / questionnaire's wording & measurement, evaluate any ambiguity in the questions and the questionnaire's reliability. The objective of the pilot study is to obtain additional information so that the researcher can further improve the survey questionnaire before the actual study.

Piloting research instruments is a standard goal in social science research and offers a number of benefits to the researcher and the research in general. According to Isaac and Michael (1995, 38) pilot testing or pre-testing offers a number of benefits some of which include:-

- an opportunity to test hypotheses;
- allowance for checking statistical and analytical procedures;
- an opportunity to minimize unforeseeable problems and errors in the study; and
- Measuring or gauging accuracy of research instruments to reduce the costs incurred by inaccurate instruments.

Through piloting testing, researchers are also able to determine the degree of clarity of the set questions, and identify potential areas for further probing (Neuman, 1997). Pre-testing of the research instruments took place among PVI study volunteers at Sex Workers Outreach Program (SWOP) - Kariobangi, on the February 27, 2014. The Sex Workers Outreach Program (SWOP) is a local NGO that works with support and collaboration of the University of Manitoba and other learning institutions and development partners. SWOP works to strengthen the prevention and management of STDs and HIV infection/AIDS among the most at- risk populations such as sex workers, MSMs, IDUs as well as women by providing treatment and care. SWOPs programs are based evidence -based research that includes clinical trials and disease surveillance that targets populations from Nairobi's informal settlements.

The PVI Study, was a Double –blind, Randomized Trial of monthly treatment with Metronidazole and Miconazole Co-formulated suppositories verses Placebo for Preventing Vaginal

infections in HIV- Seronegative Women. Ten (10) survey questionnaires were administered to volunteers that had completed participation. Additionally, four in depth interviews were conducted with four of the volunteers while two Key Informant interviews were conducted with study staff. After the pre-test, the responses were reviewed against the questions to gauge the completeness and usability of the tools and the extent to which the targeted population was able to respond to the study questions.

3.9.3 Data collection process

The data collection process followed the mixed sequential approach. Data collection begun with the quantitative followed by qualitative (phenomenological) data as shown in the *figure 5* below.

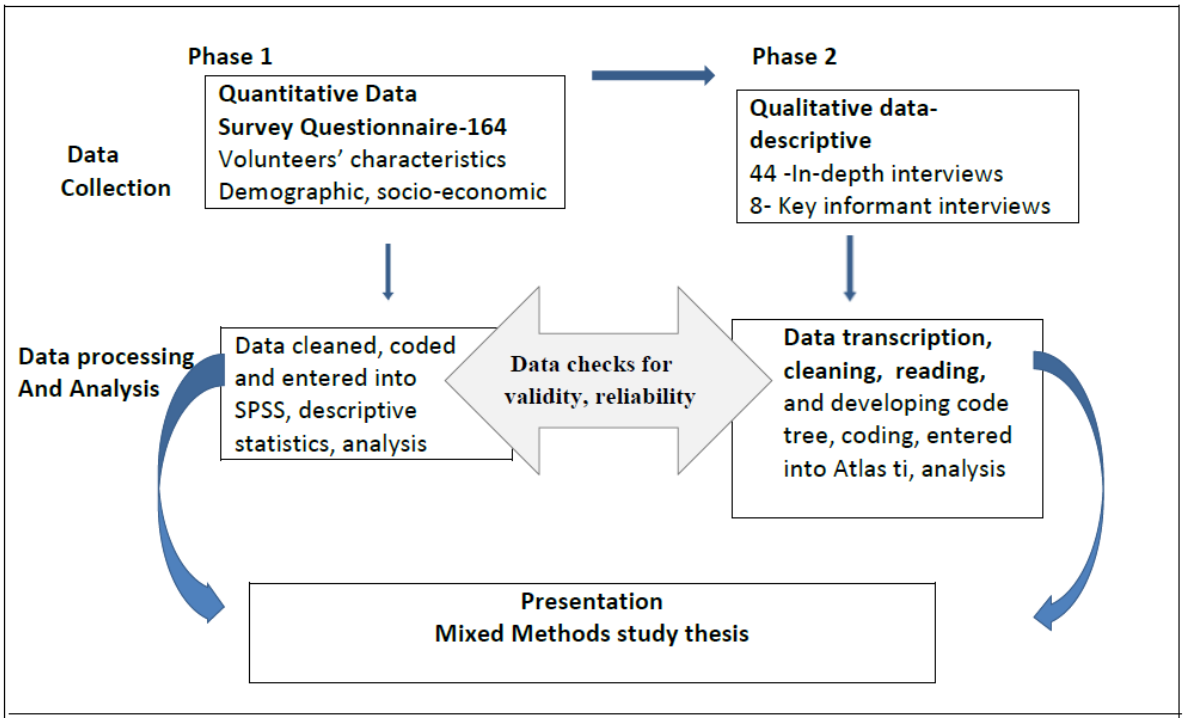


Figure 5: Sequential data collection process

Quantitative data

A cross-sectional survey was conducted using a questionnaire developed by the researcher among 164 study participants from the 6 studies in focus. Although sample size determination is a major consideration in quantitative data collection, in this study all the 164 participants reached, were all interviewed as opposed to having a representative sample (as explained in sampling procedures on page 45). As described in the participants' eligibility crite-

ria for this study, the 164 included all screened found eligible and enrolled; eligible but declined enrolled or dropped after enrolment into the studies that were available to participate in this study. Data collection from current participants - HIV-CORE 004 (as described on page 33 under operational framework) occurred in 4-point periods. The periods were after screening eligibility, upon enrolment and receiving first vaccine, second vaccine and review points). This was important in capturing experiences at different points of clinical participation.

Before commencing the data collection, all participants were consented as required. The information collected ranged from socio-economic and demographic characteristics. Specific data relating to the studies that one had been involved in. Other questions of survey tool looked at the aspects of clinical research participation such recruitment (information received and from whom), informed consent, samples collected and frequency; decision making as contained in the survey tool.

On completion of the survey questionnaire, the volunteers were further, requested to participate in follow –up interviews for the second phase of the study. Those agreeing provided their telephone contacts scheduling of the interview. The same identifiers applied for volunteers agreeing into the subsequent qualitative interviews.

Qualitative data

An in-depth tool was used for collection of qualitative phenomenological data. The use of the descriptive phenomenological approach (Giorgi, 2009) could allow the study participants to adequately share their experiences of participating in the KAVI-ICR clinical studies subjectively (Giorgi & Giorgi, 2003), to provide a true picture of their individual experiences. The first instance for the phenomenological data collection was for the research team to bracket personal assumptions or views about the study subject matter. This was important in relation to maintaining natural recognition of human experiences from the perspective of the experiencer (Hussler 1937). This provides for naïve description from the first-person account of the experience as it was lived and understood by the participant.

The interviews were one –on –one and conducted in an informal manner to help the respondent be at easy using set of semi-structured guiding questions for consistency while providing opportunity for further probing or clarification. Englander (2012) has argued that typical qualitative interviewing methods are not aligned with the needs of descriptive phenomeno-

logical data collection methods, and has advocated for an interviewing structure that permits the researcher to learn more about the phenomenon without creating an incongruity between 'the experience' and 'the experiencer:'

To capture the interview data, audio recording and note taking for all interviews was undertaken. Each participant's interview received a unique identifier. To initiate the telling of their experiences, the initial question to the participants followed- "in as much detail as possible, tell me about your experiences of being recruited into KAVI study that you participated/ are participating in?' Other questions that followed were on experiences with informed consent and processing; sample collection and general trial participation. Probes were used where clarity and further explanation was required.

Study participants, also referred to as volunteers in this study, were encouraged to give full descriptions of their experiences including their thoughts, feelings, sensations, and memories along with the description of the situation in which the experiences occurred. To ensure a proper account of the events and the experiences as they ensued, clarity was sought for areas not clearly communicated. To ensure collection of complete information, all interviews were audio recorded and together with detailed notes taken the interviews to inform preliminary analysis and act as a step guard in case of data loss. In order to corroborate the data from the volunteers, additional data was from selected KAVI-ICR study staffs and peer educators using key informant tools.

3.10 Data Management

Data management in research involves the planning, collecting, organizing, validation, storage, security, backing up and preserving that allows for timely and reliable access to data-by-data users. It ensures proper handling of research data in accordance to legal, statutory, ethical and institutional requirements. Within the context of clinical research, it takes care of the ethical aspect of study participants that include confidentiality and anonymity of person information. This section therefore provides a view of data handling from collection through to processing.

3.10.1 Data handling Process

To ensure confidentiality, safety and easy access of data, a data management plan was put in place with the following considerations:-

i. A data-tracking sheet was developed and used to capture details of data from collection, storage and processing.
ii. Labels/ unique identifiers were developed. Prior to data collection unique identifiers were developed and used for identifying participants' data and maintaining their confidentiality. All data were clearly labelled before storage (hand written notes and audio recorded data for each respondent with corresponding identifiers for ease of tracking)
iii. All hard copy data that included survey data, field notes were secured into a cabinet with access only allowed to the PI. Upon data entry, back up was created for all data.
iv. Data access was limited to the study PI.
v. Destruction of raw data will be done after completion of PhD Programme and publication of research papers. Data will be stored for a period of not exceeding 5 years from the start of data collection.

3.10.2 Quality Control

i. Reliability

Reliability of data and research findings is an important requirement in a research process.
To ensure credibility and trustworthiness of the data, data collection and outcomes of the study, all research instruments were pre-tested among a population with similar characteristics as those of the population under study. This was important in minimizing internal validity threats that can arise from the data collected and the tools used for collecting the data.

To enhance data quality, a data checklist was used to capture all the data as it came from the field and as it was processed. All quantitative data was cleaned before coding and entered into SPSS version 13.0. For qualitative data, all field notes were clearly written after every interview to ensure all information captured was not lost or forgotten. All recorded interviews were transcribed as they came from the field, to help inform if there may have been any gaps that could need following up on the preceding interviews.

ii. Validity

Validity is the extent to which instruments are able to measure the phenomenon they are intended to. In a broader sense, validity is concerned with whether a research can be considered believable and true; and the extent to which it is able to evaluate its set goals. Validity checks can take different forms and some of the known ones are content validity, internal validity, utility validity, and external validity.

Content validity determines the extent to which research tools are able to fully assess or measure the given study objectives. To achieve this, all tools were pre-tested to ensure readability, clarity and comprehension. This allowed for questions that were not clear to be revised and re-worded for clarity.

Internal validity has is the congruence of research findings with the reality. This was, achieved through- sharing of research tools, pre-test findings and continuous sharing of the research findings with trial staff and study supervisors for triangulation and peer review of research findings.

Utility validity determines the extent to which given findings will be useful to players in a given area of study. This study endeavored to generate findings that will effectively and appropriately, inform the gaps in HIV clinical research resulting from volunteers' perceptions and experiences of participation.

External validity checks were conducted, as a measure of generalizability of research findings to other contexts or research volunteers. This also applied to the methodological approaches and the extent to which they can be replicated.

3.11 Data processing and analysis

Data analysis has been defined (Marshall and Rossman, 1999) as the process of bringing order, structure and meaning to the mass of collected data. Depending on the type and amount of data collected, it is a messy, ambiguous and a time-consuming process that requires creativity and attention. It does not proceed in a linear fashion; it is not neat. Data analysis is a search for answers about relationships among categories of data. It entails examining, categorizing, tabulating and recombining the evidence obtained from the research. Regardless of whether the data is qualitative or quantitative, the analysis may describe and summarize the data; identify relationships between variables or themes; compare and identify differences on the variables or themes; and forecast findings.

Two types of data namely quantitative and qualitative were analyzed in this study.

3.11.1 Quantitative data analysis

The process of quantitative analysis began with organizing all transcripts in one place. For

completeness and accuracy, all interviews data was cleaned from the first instance. Anonymity of all respondents' identities was maintained by assigning unique identifiers to each filled questionnaire. The data was subsequently, entered into SPPS statistical software for analysis. Simple statistical analysis was performed through frequency distributions and cross tabulations to provide averages and percentages. Tables and graphical representations were used to provide an overview of the data. Additionally, a Chi square test was performed to test for statistical differences in observed prevalence with p-values less than 0.5 being considered statistically significant.

3.11.2 Qualitative data analysis

Data analysis in qualitative studies is a continuous process that usually begins with the onset of data collection with an aim of eliciting meaning from the subject of study. In qualitative research studies, this consists of preparing and organizing data, then reducing the data into themes by way of coding and condensing the codes, and finally representing the data in a report for (Creswell, 2013). Data organization involves writing out field notes, verbatim transcription of audio data, cleaning and assigning unique identifiers on all transcripts to maintain respondents' confidentiality. The application of these processes is common in much of the available qualitative research literature although with some variations across the various methods of inquiry. Usually the researcher works/lives with the rich descriptive data as common themes or essences begin to emerge. At this point of analysis, there is a total immersion of the researcher into the data in order to achieve both a pure and a thorough description of the phenomenon.

A phenomenological approach to analysis applied for the qualitative component of this study. Phenomenological data analysis employs data reduction, analysis of specific passages, individual elements of discourse, and patterns, as well as a search for all possible meanings. The goal of phenomenological analysis is to not only explain or discover causes, but to clarify the meanings of phenomena from lived experiences. The researcher analyses the descriptions given by participants and divides them into meaning-laden statements. These meanings according to Giorgi (1997) are essential in the construction of the phenomenon under study and allow the researcher to bring to account a written description the structure of the phenomenon of interest. Further, in his works, Giorgi (2005) adds phenomenological analysis offers an important shift from a positivist cause-effect focus to one of human subjectivity and thereby discovering the meaning of actions or decisions, which are important elements in discovering

and understanding the perceptions and experiences of volunteers that participate in clinical research.

The application of descriptive phenomenological approach in examining the experiences in a given phenomenon, offers researchers the benefit of immersion in the data collected through face-to-face interviews. As the interviewer, the researcher listens to the participants' descriptions and continually reviews and studies the data from collection through to transcription (Spiegelberg, 1975). In this process, the researcher sets aside all personal judgments and expectations by bracketing his or her experiences relating to the subject of study. Husserl refers to this process 'epoche', whereby the researcher is expected to suspend "all judgments about what is real—the 'natural attitude'—until they are founded on a more certain basis" (Creswell, 1998). Through immersion with the data, the researcher begins to recognize the emergence of universal essences, or eidetic structures, in relation to the experiences of those that have participated in the given phenomenon (Spiegelberg, 1982).

The analysis of the phenomenological qualitative data for this study followed Giorgi's (2009) descriptive approach. The Husserlian philosophical phenomenological method follows three steps. In the first step one turns toward the object whose essence must be determined and one describes it; second, one assumes the transcendental attitude of phenomenological reduction and finally one describes the essence or invariant characteristic of the object with the help of the method of free fantasy variation. Giorgi's (2009) modified Husserlian approach that provides five steps that are described and explained, within the context of KAVI-ICR volunteers in order to provide understanding of their experiences of clinical research participation. The steps are: (1) assuming a phenomenological attitude, (2) reading in entirety each and every transcript for a sense of the whole, (3) delineating meaning units, (4) transforming the meaning units into sensitive statements of their lived-meanings, and (5) synthesize a general structure of the experience based on the constituents of the experience.

Although data analysis in qualitative studies is continuous and starts at data collection, the actual data analysis for this study commenced with the completion of the data transcription and cleaning. Following Giorgi's modified analytical approach, my first considerations was to assume a phenomenological attitude by 'bracketing or putting aside all my presumptions regarding the phenomenon under study. The concept of bracketing has been extensively discussed in Husserl's work and other phenomenologists. Emanating from Hussler's (1931)

epoche, the act of bracketing requires the researcher to be present to data without positing its validity or existence in order to see it as it appears and presented. Given my prior encounter with KAVI-ICR volunteers this approach ensured that I remained true to the phenomenological confines.

Having acquired a phenomenological attitude, the second stage of the analysis was to read and re-read each and every transcript in totality in order to get a sense of the whole of the experiences (Giorgi, 2009) as shared by the study participants. The third step of the analysis involved delineating 'meaning units' and points at which meanings shift within descriptions of individual volunteer experiences for easy of data management(Giorgi, 1985 & Giorgi, 2009). In the fourth level (4) the meaning units were transformed to reflect the experiences of various volunteers. In the last involved building a structure of the meaning units in a manner that a reader can follow through the experiences and showing connectedness and points of departure.

3.12 Study Limitations

This study encountered a number of challenges. Slow recruitment of volunteers from past studies was a challenge as some of them had changed addresses or moved away from where they originally lived. While for some the phone contacts had changed. This was mostly common among those volunteers that had participated in PrEP study, which comprised of high-risk population of the MSM community. Tracing this sub study population was particularly challenging, as MSM are not only highly mobile but also known by different names to different people. Being a highly mobile community, tracing them to the places where they lived at the time of joining KAVI study was not easy. For some, it turned out that the names they had provided at the trial site were not the same the ones they were known by in the community. With the help of the few that had been traced, a snowball approach was adopted to help locate other members of the MSM community that had participated in the KAVI-ICR PrEP study. This approach was however, met with far greater challenges with a number that had never participated in the PrEP study claiming to have been participants up with the hope of being interviewed and be reimbursed. This scenario nevertheless, was resolved with the help of trial staff who were able to screen them.

This study intended to interview a number of potential volunteers who had declined to participate, as well as those that had dropped from participating in the selected KAVI-ICR studies,

unfortunately only a few were willing to be interviewed. Recall bias was also a major limitation among past volunteers, especially when it came to them sharing their experiences and what they perceived their participation to have been like. Answers like "my experience was good" were more without further explanations. All study participants were informed about their participation being voluntary and it would not attract any payment. However, trial participants were reimbursed a sum of Kenyan shillings 500/= to compensate for the transport costs to and from the interview site.

3.13 Positionalities in the research Process

At the time of joining the PhD program, I had over 7 years work experience in population and health research including program coordination. My role during those past years involved coordinating researches as well as data collection in HIV related work. Between the year 2003 and 2007, I worked for FHI 360 collecting data for various studies such as: Condom study involving sex workers (2004), evaluating the IUCD checklist involving health providers and policy makers (2005), Adult-Infant Neverapine study involving HIV positive pregnant women (2006), Field Testing of the Kiswahili booklet- *Kipya na Poa Kwa Vijana* (*what is new and good for the youth)*- an HIV information booklet for the youth (2008), evaluation of FP / VCT integrated services (2008). Through these works, I was not only able to gain immense knowledge and skills in qualitative health research but also the understanding of ethical issues surrounding human subjects and the importance of the informed consent. During these periods, I was also involved in the translation and back translation of research tools in the Kiswahili and English languages. Besides the knowledge and skills gained, I also gained people skills such as empathy, trust building and respect for persons more so when it comes to dealing with vulnerable populations such as sex workers and PLHIV.

My entry into HIV vaccine research studies goes back to 2006/7, when I was hired to coordinate the *Gender and social barriers to participation in HIV vaccine trials study.* The study was conducted by the Department of Community Health (now School of Public Health) University of Nairobi in collaboration with the International Center for Research on Women (ICRW), KAVI-ICR, and IAVI. Like many community members, I had never heard of KAVI before, nor did I know that there were HIV vaccine trials taking place in the country. What came into my mind on hearing that there were human subjects involved- was "*these people are being used as Guinee pigs*" a notion that changed following a two-week pre-research training. The training provided understanding on the various phases of trials imple-

mentation and the processes of engaging the prospective volunteers through community mobilization, screening, enrolment and follow-up and the various actors involved. With this background, I was able to get a glimpse of the challenges facing the implementation of clinical trials and develop a sense of preparedness to coordinate the *Gender and social barriers study.* As a study coordinator, my work also involved data collection, identifying emerging themes, coding and drafting summaries in addition to providing regular updates to the research partners. In this study, I was able to engage with the various types of study respondents namely- trial staff as key informant respondents, trial volunteers as in- depth interviews respondents and focus group discussants; peer educators and various categories of community members as focus groups discussants. The interviews and discussions held exposed me to a wide range of issues and understanding of the social and contextual factors that influence men and women's participation HIV vaccine research. These included- stigma, gender, myths and misconceptions associated with HIV vaccines, social and economic costs and their impact on information gathering, and decision-making. Some of the key recommendations from this study were for KAVI-ICR to make concerted efforts in engaging with communities and integrating social science component into clinical research in order to understand social and behavioral issues around clinical research implementation. It is from the recommendations of this study that the inclusion of social science PhD component was included as part of capacity building in IDRC grant.

My data collection process was guided by the phenomenological approach of bracketing as had been suggested by Hussler (1859-1938) and advanced by other phenomenologists (Giorgi, 2009) where the researcher makes a conscious effort of removing oneself from prior experiential knowledge and personal bias so as not to influence the illustration and outcome of a given phenomenon. This was particularly very important given my past engagement and experience with past KAVI-ICR volunteers. This endeavor was successful without having to refer to past studies and instead asking the participants to describe the studies they had been involved in and what their experiences were.

In order to gain trust with the volunteers, I explained that I was a student and the purpose of the study was to collect data to help KAVI-ICR improve on their conduct of clinical trials, which included enhancing experiences of volunteers in their participation. With this information and assuring them of confidentiality, I was able to gain trust from many of the volunteers and conduct successful interviews.

CHAPTER FOUR
FINDINGS

4.0 Introduction

This chapter provides the study findings whose aim was to explore the perceptions and experiences of volunteers participating in six selected KAVI-Institute of Clinical Research (KAVI-ICR) HIV clinical research studies. The study sought to understand the potential impact of individuals' perceptions and experiences on decision making to participate in HIV clinical research studies. The specific aims were to:

1. Describe the characteristics of individuals who participate in clinical research
2. Examine individuals' perceptions towards clinical research participation
3. Examine volunteers' experiences at various stages of trial participation and their potential impact decision making to participate
4. Identify factors that enhance and constrain clinical research participation experience
5. Explore similarities and differences of participation experiences among volunteers in the KAVI studies

The findings reflect the views of the volunteers using a mixed method approach with the qualitative approach taking precedence. These fall under four sections based on the five study objectives with objectives 2, 3 and 5 having been merged to form section 4.3 as follows:-

Section 4.1 gives a description of the study participants' characteristics with regard to participation in clinical research. Section 4.2 gives an account of volunteers' perceptions and experiences through various levels of clinical research participation and their potential impact on decision making. Also included in this section are similarities and differences of participation experiences among volunteers in the KAVI studies. Section 4.3 presents factors that enhance and /or constrain clinical research participation experience from the perspective of the study respondents.

4.1 The characteristics of volunteers who participate in clinical research

A survey tool was administered to 164 eligible willing study volunteers drawn from six selected KAVI-ICR studies conducted at both the KAVI-ICR KNH and KAVI-ICR Kangemi

trial sites (Table 5.1). Four of the studies were phase 1 HIV- vaccine trials (B002, B003, HIV- CORE 004 and Sendai - (S001), one drug study (PrEP) and observation study (Protocol J). Majority of the volunteers were from the B003 study (41) while the least were from the PrEP study that was predominantly MSM population. The details are presented in the *table 14* below

Table 14: Distribution of Volunteers Interviewed by Study Type

Study Name	**Survey Tool Respondents**			**In-depth Interview Respondents**		
	Number of females n=52 (%)	**Number of males n=112 (%)**	**Totals** (n=164)	**Females (n=22)**	**Males (n=22)**	**Totals (n=44)**
B002	9 (25)	27 (75)	36	5	3	8
B003	13 (32)	28 (68)	41	4	4	8
HVCORE 004	21(60)	14 (40)	35	6	6	12
S001	2(10)	18 (90)	20	4	2	6
PrEP	0	13 (100)	13	0	4	4
Protocol J	7 (37)	12 (63)	19	3	3	6

In depth interviews were conducted with 44 study volunteers purposively selected from the survey questionnaire respondents as shown in *Table 14* above. While the proportion of males recruited into the study were more than the females deliberate efforts were made to recruit equal numbers between male and female volunteers.

4.1.1 Volunteers' demographic characteristics

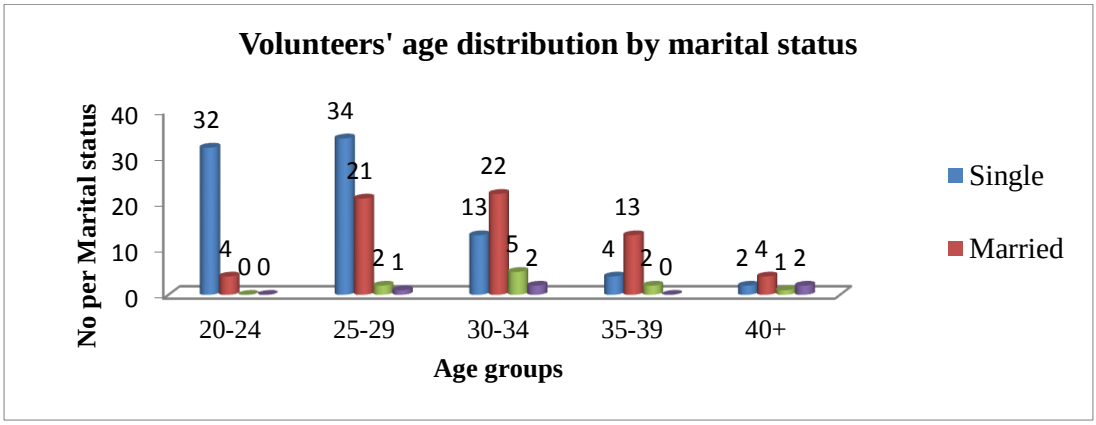
The findings in this section outline the characteristics of volunteers that participated in KA-VI-ICR studies based on demographic and socio-economic characteristics.

Volunteers' Age Distribution

The highest number of volunteers was recorded among the age brackets 25-29 and 30-34 that had 58 and 42 volunteers respectively. This was followed by those in the age bracket 20-24 with 36 volunteers.

There were more singles (52%) in the study with the highest proportion (77%) being drawn from those below 29 years of age. There were more married volunteers than singles from those falling in the age brackets 30-34 as depicted in *Chart 1* below.

Chart 1: Volunteers' age distribution by marital status

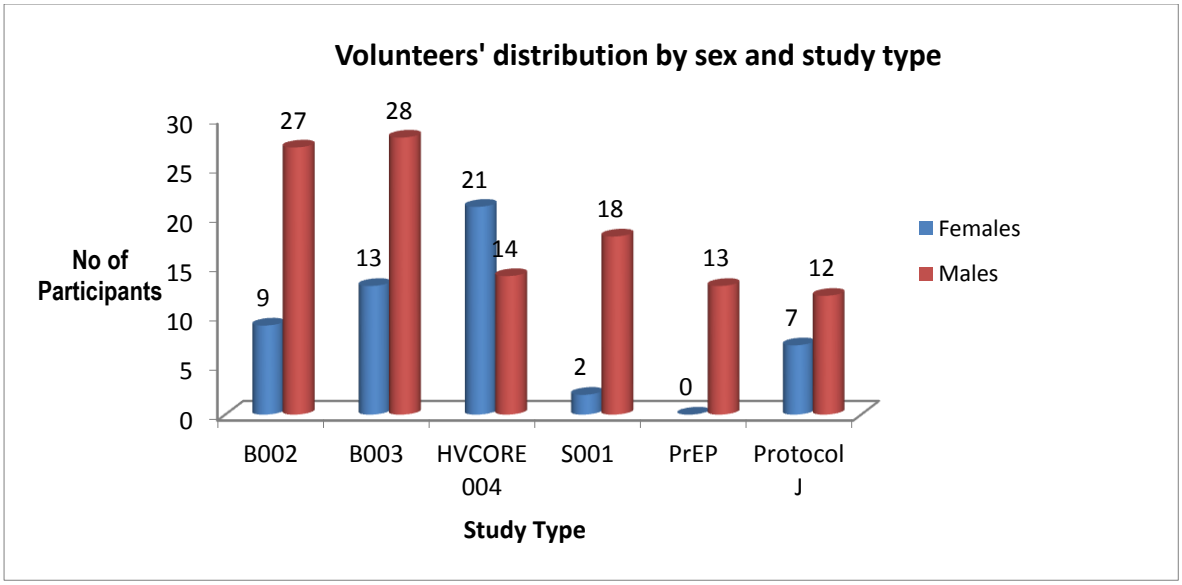


The proportion of volunteers with single status seemed to decline with increase in age while the married were more with increased age.

Volunteer' sex distribution

Overall, sixty-eight per cent (68%) of the study respondents were males. The PrEP study was predominantly male and the HIVCORE was the only trial to record highest number of female volunteers (21) in the KAVI studies as compared to the males (14). The other four studies recorded fewer female volunteers compared to the males. In the B002 trial for instance, of the 36 volunteers that were interviewed for this study, 27 were females; for the B003 study, of the 41 that were interviewed, 28 of them were males; for Protocol J study 12 were males while 7 were females and finally for the S001 study, of the 20 volunteers interviewed, 18 were males as summarised in *Chart 2* below

Chart 2: Volunteers' distribution by sex and study type



When it came to sex distribution by marital status, the singles accounted for the highest number with over 52% (no-86) of all the volunteers interviewed while those reporting to be married were 38.4% as shown in *table 15* below.

Table 15 Volunteers' distribution by Sex and marital status

Marital Status	**Female (n=52)**	**Male (n=112)**	**Total (n=164)**
Single	23(14.0%)	63(38.4)	86(52.4%)
Married	23(14.0%)	40(24.4%)	63(38.4%)
Divorced	2(1.2%)	7(4.3%)	9(5.5%)
Widowed	4(2.4%)	2(1.2%)	6(3.7%)

Among the females the proportions of those married were equal to those reporting single status while among the males those who reported being single were more than the married as shown on the table 15 above.

4.1.1.1 Summary of key aspects of volunteers' demographic characteristics

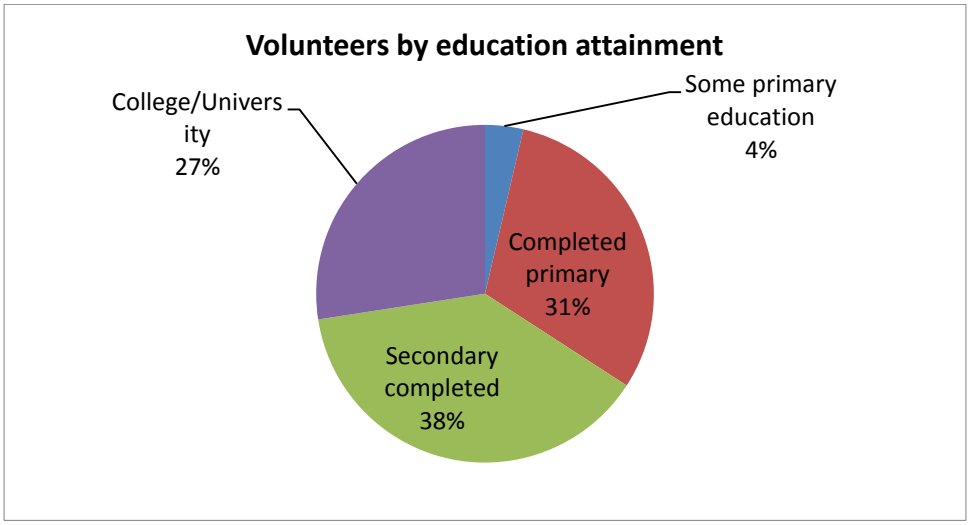
- There was observable high proportion of males (68%) to the females in all volunteers interviewed across the five studies that had both male and females except for the HIVCORE. To note is that the HIVCORE study was the first KAVI-ICR trial to record the highest numbers of females (21) to the males (14) which may be attributed to the peer recruitment strategy in addition to the community seminars
- There seems to be a correlation of age and marital status to participation as indicated by the high numbers of volunteers of the age bracket 25-29 (58) were higher and 30-34 (42) followed by those 20-24 (36). The singles under the age of 29 presented the highest proportion of study participants with the numbers declining from age 30 upwards.

4.1.2 Social economic characteristics (education, income status, occupation)

4.1.2.1 Education

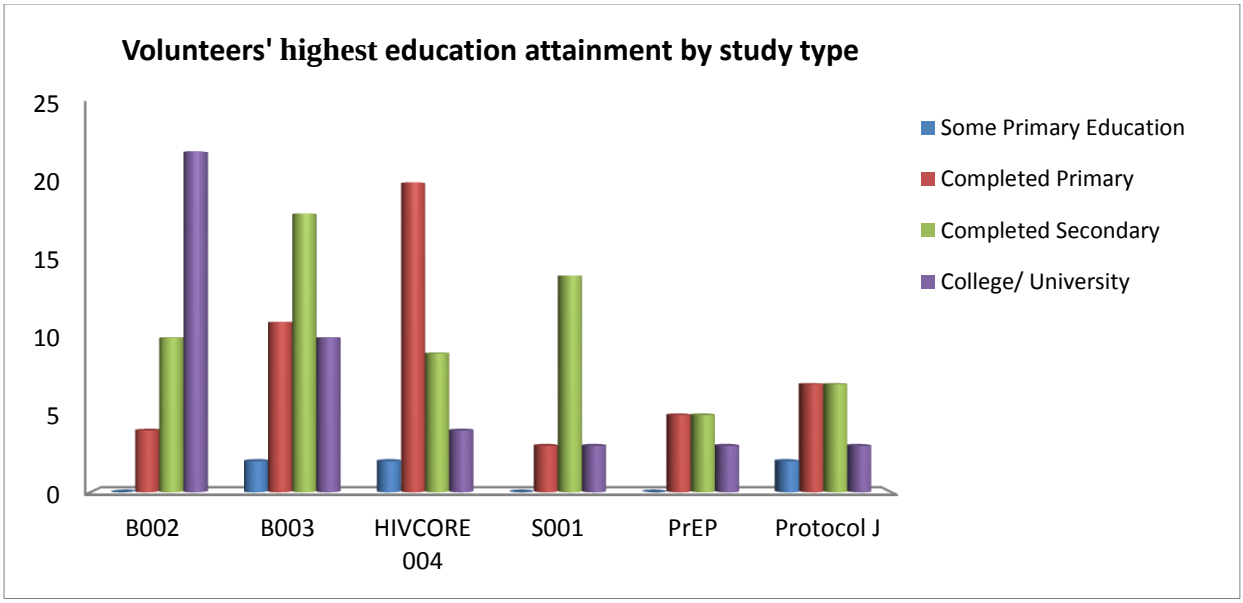
The levels of education attainment ranged from incomplete primary education to college level including University. A significant proportion of the volunteers (38%) had Secondary School as the highest level of education attained. Those who had completed primary and college levels of education were 31% and 27% respectively as depicted in *chart 3* below.

Chart 3: Volunteers' by highest level of education attained



Volunteers' participation by education attainment showed contrasts by study type and study site. The KAVI –ICR KNH site had a majority of its volunteers indicating College/University and Complete Secondary as the highest level of education attained under the B002 vaccine trial (22/36) and S001 vaccine trial (14/20) respectively. The Kangemi trial site had on the other hand recorded a big number of volunteers (36) with complete primary as the highest level of education attained with majority emanating from the HIVCORE vaccine trial (20) and the B003 vaccine trial (11). A majority of the Protocol J and PrEP volunteers had either attained Complete Primary or Complete Secondary as shown in the *chart 4* below.

Chart 4: Volunteers' Education Attainment by study Type



4.1.2.2 Occupation

Casual workers represented the highest number of volunteers interviewed for this study at 57 accounting for close to 35% followed by 39 (24%) who said to have been on permanent employment. A total of 20 volunteers were unemployed with 11 of those being female while those engaged in petty grocery were of equal number among the males and female as shown in the *table 16* below.

Table 16 Respondents' occupation by sex distribution

Occupation	**Female (n=52)**	**Male (n=112)**	**Total** (%) (n=164)
Unemployed	11 (55%)	9 (45%)	20 (12.2%)
Student	2 (17%)	10 (83%)	12 (7.3%)
Casual worker	21(37%)	36 (63%)	57(34.8%)
Business (including Petty vendor/grocery)	14 (39%)	22 (61%)	36(22%)
Permanent employed	4(10%)	35 (90%)	39(23.7%)

About 24% volunteers indicated to be in permanent form of employment with more than 70% being either unemployed, casual employment or were engaged in some form of business. The HIVCORE 004 and B003 studies both conducted at the KAVI Kangemi trial site recorded the highest number of participants whose occupation was casual work, thus 60% and 34% respectively. The highest proportions of those in permanent employment were from the B002 (44%) and B003 (27%). The Protocol J and PrEP had higher proportions of those reporting engagement in various forms of small businesses at 36.8% and 30.8% respectively. The vaccine trials were the only studies that had attracted a fair number of students as shown in *table 17* below

Table 17: Participants' occupation by study type

Study Name	Unemployed	Student	Casual worker	Business(Petty vendor/grocery)	Permanent employed	Totals
B002	5 (13.9%)	4(11.1%)	4(11.1%)	6(16.7%)	16(44.4%)	36
B003	5(12.2%)	1(2.4%)	14(34.1%)	10(24.4%)	11(26.8%)	41
HIV-CORE004	5(14.3%)	1(2.9%)	21(60%)	6(17.1.7%)	3(8.6%)	35
PREP	1(7.7%)	0	6(46.2%)	4(30.8%)	2(15.4%)	13
PROTOCOL J	3(15.8%)	0	6(31.6%)	7(36.8%)	3(15.8%)	19
S001	1(5%)	6(30%)	5(25%)	4(20%)	4(20%)	20
Total	20	12	56	37	39	164

4.1.2.3 Income distribution

Close to 20% of the volunteers reported to have had no monthly income at the time data collection for this study. Over 27% of the participants reported earning more than Kshs.10,000 with the greatest proportion of them being males (39/45) similarly those (36/46) earning between Kshs.5,000- 10,000. The highest proportion of the females (46.1%) had a monthly income Kshs.5,000 with only a few (6) having an income of over Kshs.10,000 per month. On the other hand, there were near equal proportions of men in the incomes bracket of Kshs. 5000-10,000 and those of Kshs.10,000 and above as shown in *table 18* below

Table 18: Volunteers' monthly income (in Kshs.) distribution by sex

Sex	None (n=32)	Below 5,000 (n=41)	Between Ksh5,000-10,000 (n=46)	Over Kshs. 10,000 (n=45)	Totals (n=164)
Female	12 (23.1%)	24 (46.1%)	10 (19.3%)	6 (11.5%)	52
Male	20 (17.9%)	17 (25.2%)	36 (32.1%)	39(34.8%)	112

There were significant differences of income distribution based on study type. Fifty per cent (50%) of volunteers from the B002 study reported a monthly income of Kshs. 10,000 with twenty eight per cent (28%) reporting no income. The B003 study had most of its volunteers (34%) reporting monthly incomes of between Kshs. 5,000-10,000 and closely followed by those (31%) earning less than Kshs. 5,000 per month. The HIVCORE study on the hand had most of its volunteers (43%) falling under the income bracket of below Kshs. 5,000 per month. Overall, more than half of the volunteers reporting an income of over Kshs.10, 000 were from the KNH studies (B002, Protocol J and S001). *Table 19* below gives volunteers' income distribution by study type

Table 19: Participants' income distribution (in Kshs) by study type

Study Name	None (n=32)	Below 5,000 (n=41)	5,000- 10,000 (n=46)	10,000 + (n=45)	Totals (n=164)
B002	10 (28%)	5 (14%)	3 (8%)	18 (50%)	36
B003	4 (10%)	13(31%)	14 (34%)	10(24%)	41
HIVCORE 004	6 (17%)	15(43%)	11(31%)	3 (9%)	35
PrEP	1 (8%)	1(8%)	6 (46%)	5(39%)	13
Protocol J	3(16%)	3(16%)	6(32%)	7(37%)	19
S001	8(40%)	4(20%)	6(30%)	2(10%)	20

Most of the youthful respondents were out of school and unemployed. Some of the youth added that they had joined the study to keep themselves busy.

4.1.2.4 Summary of Key Findings

This section of the findings looked at the socio-economic characteristics of volunteers that had participated in the study. The following is a summary of Key findings:

1. The highest proportion of volunteers had completed secondary level of education accounting for over 38 percent of study respondents while those who had completed primary and college levels of education were 30.4% and 27.4% respectively
2. The highest proportion of volunteers earned a living from being casual workers (34.8%) while those that reported to be in permanent employment were 23.7%. Of the 57 casual workers, HIVCORE study (36.8%) and B003 (24.6%) captured the highest numbers. The B002 study on the other hand had the highest number of the permanent employed (41%). Those engaged in various forms of businesses and the unemployed were 12.2% respectively
3. Close to 20%, volunteers had no form of monthly income. Significant proportion of the female volunteers (46%) had a monthly income of below Kshs.5,000.Female volunteers than males were the lowest low income earners with 46% recording a monthly income of less than KShs.5,000 per month (about $2 a day) as compared to the male volunteers. A lot more males (34.8%) earned more than Kshs. 10,000 per month and a mere 11.5% of the females getting similar amounts.

4.2 Perceptions and Experiences with clinical research participation

This section gives an account of volunteers' perceptions and experiences through various levels of clinical research participation. These levels included recruitments and information delivery sessions, informed consent and consenting processes, screening and sample collection procedures, enrolment and retention. The findings are presented under the following aspects

i. Learning about KAVI-ICR trials and information provided
ii. Motivation to participate
iii. Study Requirements: informed consent and consenting process including screening for medical eligibility, sample collection, use of contraception,
v. Enrolment, randomizations, trial visits, trial staff;
vi. Perception of trial benefits and risks

4.2.1 Learning about the KAVI-ICR clinical trials

Volunteers were asked how they had come to learn about the KAVI trials, types of information received in the recruitment processes and how these had shaped or influenced their intent to participate in the studies.

Majority (88.4%) of the study respondents reported having learnt about the trials taking place at the KAVI-ICR trials sites from community mobilizers/ peer educators (47%) or friends (41.5%). Half of the volunteers that were interviewed from the B002 study learnt about the trial from friends whereas more than half of those interviewed from the B003, HIVCORE 004, and Protocol J studies, learnt about the trials from community mobilizers/ peer educators (*Table 20 below*).

Table 20: Participants' sources of information about KAVI studies

Study Name	**Friends (n=68)**	**Relatives (n=4)**	**Community Mobilizers/ Peer Educators (n=77)**	**Other (n=11)**	**Totals (n=164)**
B002	18 (50%)	2(5.5%)	15 (42%)	1 (2.7%)	36
B003	14 (34.1%	0	26 (63.4%)	1(2.4%)	41
HIV-CORE 004	13(37%)	1 (3%)	19(54%)	2 (6%)	35
PrEP	9(69%)	0	2(15.4%)	2 (15.4%)	13
Protocol J	3(15.8%)	1(5.3%)	10(52.6%)	5(26.3%)	19
S001	11(55%)	0	9(45%)	0	20

Apart from the KAVI-ICR staff working at the community, volunteers indicated that the people that had told them about KAVI studies were well known to them. Some of these people were closely linked to KAVI-ICR by either helping with community mobilization as peer educators, had participated in past KAVI-ICR studies or were at the time of recruitment participating in a trial and as such could be trusted with their kind of information.

> *A friend of mine introduced me to it. He is student here at Nairobi University introduced me to it. My friend told me that there was clinical research being conducted at Kenyatta and they need volunteers. He told me if am willing to take part I should come for the seminar and have my own decision (S001 Single Male).*

A number of these volunteers also reported participating in past studies before transitioning to the current ones. The use of banking protocols is not uncommon in clinical trials. Banking protocols are studies that screen individuals for prospective studies. Depending on the prospective study, the individual may be both high risk and low risk. During the course of their engagement with the trials, participants may give blood samples that are studied for various aspects. In addition to having individuals waiting to be recruited in prospective studies, banking protocols also collect human samples for various forms of analysis.

> *I was here in an earlier study, long ago, I do not remember if it was known as protocol A, something like that, and it was a study… I was just tested. My status, at times I give blood. I came for around six months. Then I went for some time until I forgot about KAVI. It was like two years, and then one day I received a call. I even did not know who it was; I saw this was a private number. I talked to madam (name withheld), from KAVI, she told me that there was a study starting and inquired if I would willing and available to attend (S001- Married Male, Casual Worker)*

For one male volunteer from the B002 study, his initial contact with KAVI had been through a community mobilization exercise which had led him to joining the K001 study. It was while in K001 which he referred to as database, where he was recruited from to join the B002 study as documented below

> *There was a community mobilization…... I was in Kibera that is where we met and I was recruited. At first, we received basic education about HIV and AIDS. These were people working with the community; they came to Kibera and talked to us and explained. I first joined K001. K001 that was like as a database…, so in case of other clinical trial…… like us for B002, most of us were recruited from K001. So, I was in K001 then I graduated to B002 (BOO2, Married Male 26years old Employed)*

At the community seminars, participants also learnt about what KAVI does and what the potential benefits of participation could be. Health benefits such being screened free of charge and receiving free medical services whenever sick during the course of participation was important as alluded to by one volunteer who shared that they had been promised free health care if you are found to be sick.

> *There is a woman who came to teach us in Kaptagat, she came to Kaptagat, assembled us,*

and taught us about KAVI. She told us KAVI helps maybe if you join KAVI you will know if you have any disease or if you do not … you will be given a vaccine (HIVCORE- Single Female, Hair dresser)

The role of peers in the recruitment process and decisions to participate was also seen among volunteers that had transitioned from banking protocols. Being in banking protocols also meant that volunteers were in continuous contact with trial staff and were able to get information about upcoming trials.

It was a friend who invited me into the study. My friend was in a study called open B he invited me for open B then they started PrEP and I shifted to PrEP. About this study, it was the nurse counsellor who told us that we are eligible to start the new study...It was for male having sex with males (*PrEP, Widowed Bisexual Male).*

A few reported having learnt about KAVI studies by chance while walking around the Kangemi area and saw KAVI sign post and got interested in knowing about what they do.

…. I usually hang around this area so I saw the KAVI sign post and I was interested to know what it was all about …… I came to the reception and I was linked to somebody and I was given some brochures, I read about them and I was linked with a Peer Educator who educated me on what a vaccine is and the importance of participating in a vaccine study (BOO3, Single Male)

The study sought to know the nature of information the introducers had given to them regarding KAVI and the studies that were recruiting and the relevance of the information to their decision making into participation. A number of volunteers talked of having been informed about a study that was recruiting volunteers, and if interested they could join. For others it was additional information that included potential benefits of participation such information and monetary gains.

…..my friend told me that there was a study, being carried out by KAVI and that it was very educative if I could join. He was in the trials before but we could not come together (PrEP MSM 34 years old)

He told me that there is a research that is being done on those who are positive to see if there is a way of reducing the effect of the Virus and to get the vaccine for the disease. He told me about the samples that they will need from us and in the process they will follow us and monitor our progress that is how I understood it (Protocol J, discordant married male, Security Guard)

Besides receiving explicit information on the impending studies, recruiting, appealing information such monetary gains for participation given. Although a number of volunteers cited a number of reasons for joining the studies, the information about potential monetary gain seemed appealing more so to the unemployed or those needing extra income. One unemployed male volunteer from the PrEP study explained that besides, being told that KAVI needed volunteers for an upcoming research, of interest is the monetary gain which had an influence on his decision to participate in the PrEP study as explained in the excerpt below:-

Ok what did he tell you about KAVI?
R: He told me it was a research institute doing a research and that they needed people. Those participating were to be paid he also told me the number of visits which were 24 and that we were to receive medication in the process, there was to be a transport reimbursement, we were also to be given phones and 400 worth of airtime per month. Since I was desperate by then I agreed with the boy and he paid for our fare from town to here in Kangemi (PrEP MSM 31 years old, unemployed, dropped out).

The statement above is an indicator of decision- making based on vulnerability status and that perhaps meeting ones felt individuals needs supersedes risks.

4.2.2 Perceptions and experiences with the information seminars

The scope and complexity of information provided in the community varied from that which followed at the trial sites and so did the numbers of those attending the meetings. In the community, volunteers received general information about HIV and vaccines trials, those interested in receiving further information were invited to the trial sites to receive more information about the upcoming studies. Although the community meetings attracted many people most of whom were curious, seminars at the trial site were more focused and attracted fewer more so those that wanted to learn a little more about HIV and vaccines with some having the intention to participate in the trials.

4.2.2.1 Types of Information provided

Study participants were asked to mention the various forms of information they had received at various stages of recruitment, levels of understanding and the overall influence of the information received on the decision making. Various forms of information were received at the recruitment seminars. This ranged from general HIV information, KAVI-ICR's work, development of vaccines and trials, voluntarism and potential benefits to individuals among others.

One male volunteer explained that he had received information about the research including, its aims, target population or would be potential participants and where the research was being conducted.

> *..... They told us that there in an HIV research and they are trying to find a vaccine, looking for a cure even though they were not certain that they will find the cure, but they just wanted to involve the community. They told us about the kind of people that were required and that the research is happening at Kenyatta, at the University of Nairobi site (S001- Single Male 23years old, stage actor).*

In addition, to learning about the intended studies, the information was also on risk reduction while participating in the research. The risk reduction messages received were about the possibility of acquiring HIV if a method of protection was not in use but also safety of unborn child if a male participating in the trial were to impregnate a woman.

> *They said that once you have received the vaccine, you use a condom every time you have sex because if you have without a condom you might your partner pregnant and yet you do not know how the vaccine will react on the unborn baby. So we were told we should abstain or use a condom at all times (HIVCORE, Male Single, Vegetable Vendor)*

> *From the seminar I learnt a lot because, they were teaching about the vaccine itself, and HIV and how to maintain low risk behavior, so I can say that I learnt a lot* (*B002-Single Female, 22 years old, University student).*

Volunteers in the PrEP study specifically tended to feel that the information provided was purposely to help them change behavior, which was essentially true as risk reduction was part of the continuous counselling they received. This is contained in the quotations below

Yes, we did attend seminars. Actually, they were twice per month. It was good because we learnt about the type of risks involved in our kind as MSM. We also got some benefits like the lubricants, we used to get the KY gel here and the condoms were free, and of course, we came to learn a lot, it is as if the study was creating awareness on HIV and STIs among the MSM, so it was kind like a risk assessment (PrEP MSM volunteer)

I: What kind of information did you receive in the meetings?
R: It was about HIV trials, HIV transmissions, how a person can access HIV treatment, STIs screening, risk assessment among the MSM and also the behavior change and communications. In a way, it was something that was trying to assist the MSM group in taking charge of their lives like to avert from drug abuse, which is one of the common behavior that make MSM to be at risk actually I can say I benefitted a lot from that (PrEP Bisexual, Separated Male, Casual laborer)

Part of the information provided was regarding voluntarism. One female volunteer who had declined enrolment in spite of having been eligible said that their participation was out of free will as explained in the following excerpt

She told us that it was a study from Nairobi University. They were trying to know if they put that virus in us how it was going to work in our body and if it was going to defend us, so she told us and explained more and she told us that they were not forcing us, when you are willing (HIVCORE Female, 26years old, Married, Self Employed, Declined enrolment).

4.2.2.2 Understanding of the information

Key to clinical research participation is the volunteers' understanding of the elements of the research protocol. In this study, this understanding was, based on their ability to describe the various forms of information provided at various points of participation and its relevance in advancing their decision making for participation. Most study participants reported gaining new knowledge and understanding about HIV and AIDS, how vaccines are developed and tried among human populations. This was, evidenced by their ability to recall various forms of information they had received in the course of their participation. A few participants showed difficulties in recalling the names of the studies they had been involved and instead just referred to them as KAVI.

My understanding was that the study entails finding a vaccine that will enable the immune system to withstand HIV and that is what they are testing. That we have three categories like ABC so if you will be in which group and you must know what your group will mean, and you must know your category before you get the vaccine. (HIVCORE Married Male 34 years old security guard)

Volunteers explained that their abilities to understand the information provided had resulted from the efforts of the trial staffs that were able to break the information down by applying simple English and Kiswahili with illustrations and further explanations. Given the diverse background characteristics of the volunteers, in other instances, sheng language (Swahili and English-based cant) commonly spoken by urban youths was used to convey the information. The quotations below are an illustration to understanding enablers

They used the languages that anyone would understand, from Kiswahili to any other, so I understood everything, the lady who was asking made sure that I understood (PrEP, Divorced Male, 27 years old, Peer educator, Unemployed)

She delivered it well and made us understand and even aroused our interest to join the study (B003, Married Female 26 years, Self - employed, Declined Enrolment)

We had somebody like a teacher who taught us and he could ask questions and we could also ask them. They asked which people wanted to be taught in Kiswahili and we raised our hands and there were those who wanted English so he started with English and came back or Kiswahili. Those areas that were difficult, the doctors repeated until we understood. (HIVCORE Married Male, 45 years old, Security guard)

For some, especially students, this understanding had emanated was based on their levels of education and field of study. A male nursing student found the information easy to grasp

Well since… I come from a health background….I am doing nursing….. It was clear and before enrollment, you had to do an exam. They give you a handout with all the information about the trial then you come back another day then they test your understanding of the trial so it was very clear (B002, Single Male, 24 years old, and Nursing student)

This understanding extended to their ability to describe the various study protocols and what they entailed as described in the following quotations:

In B002, we had a clear understanding that there was a vaccine that was being tested. It had already passed trials 2 more trials, the first one was safety, and they already know about it, so they are testing to see if it is working. Does it produce antibodies for fighting against HIV and Aids virus .....They will check with the reaction of your body to know if it works or not (*BOO2 Married Male 26 years old, Diploma, Employed*).

Terminologies were explained that is why am able to remember things AD35 and AD26. Yeah, we were, not only told the vaccine trials are this and this. We were, told this and this group will receive this… the placebo is this, you know. They told me that first the HIV vaccine is not an HIV virus, it is just a vaccine and it is on trial, so they told me the risks of going into it. .... I can withdraw at any time so which showed that the issue of my security is covered. Then they told me, in case I have any health condition I can just walk to the facility and say this is what I am feeling (BOO3, Single male, 22 years old)

In spite of the high levels of understanding reported, some volunteers had difficulties comprehending what the trials were testing and what some of the scientific terminologies used for the drugs being tested meant.

The length was just ok only that they used tough terminologies, which I do not know if they were from biology or chemistry. They were tough to understand (HIVCORE Married Female)

For others, difficulties were in understanding aspects of randomization and the study products for the various groups.

The information I did not understand…was those like A35 40, like virus…. I found it was hard to understand…also the groupings like AB, they said we would get vaccine; they said in group A everyone will receive a placebo. And placebo I didn't understand (HIVCORE Married Male)

4.2.2.3 Relevance of the information provided

Volunteers found the information provided at various stages of engagement with KAVI-ICR staff not only to be informative, but also educative. At the information seminars, volunteers were able to site types of information they had considered to be of importance. The extent of

relevance of the information varied from one individual to another. When asked to mention one thing they had liked about the information seminars, top on the list was vaccine knowledge with close to 34% (55) of all respondents. Ranking second was how staff treated them by 21.3 % (35) with the least number of volunteers mentioning importance of HIV testing with 7.3% (12) as shown in *table 21* below

Table 21 One Thing Liked about Seminar Information

One Thing Liked	No	%
How the Staff treated us	35	21.3
Importance of Knowing HIV status	12	7.3
Vaccine knowledge	55	33.5
HIV prevention	26	15.9
Research benefits	21	12.8
Information	15	9.1
Total	164	100.0

For many of them the series of information seminars held with KAVI staff had enabled them to have in depth understanding of what KAVI does, gain new and increased knowledge about the development of vaccines and HIV/AIDS in general.

They just told us the way they got polio vaccine and that they are doing the same to get aids vaccine. Therefore, I wanted to help get the cure. (HIVORE Married Male)

From the seminars I learnt a lot because, they were teaching about the vaccine, and HIV and how to maintain low risk behavior, so I can say that I learnt a lot (B002 Single Female, 22 years old, University student)

For many of them, there was the acknowledgement of receiving a completely new set of knowledge. One male volunteer with the B002 study explained that it was not until he joined the KAVI study that he learnt about the placebo

I had never heard about something like placebo in my life. I came to learn about it in KAVI because I just knew there is water but not placebo but with the information in the seminars and the informed consent, I was able to know what a placebo is. Now I can explain to somebody very clearly, what placebo is (BOO3, Single Male, 22 years old)

For others, the information received had helped dispel some of the misinformation and mis-

givings initially held about trial participation and clarification of terms. Some of this misinformation according to some volunteers was on the composition of the vaccines on trial at KAVI which were suspected be containing the HIV virus. Contrary to the views about trials infecting volunteers or making the vaccine from the HIV virus, volunteers were able to get the correct information as indicated in excerpts below.

They told us the difference between the vaccine and the HIV virus. That one was the most important because before I used to think that because KAVI is Kenya AIDS Vaccine Initiative, so definitely they are dealing with AIDS vaccine so what usually came to my mind was like, they just deal with HIV people…, Yeah, I have the correct information now (B003, Single Male 22 years old).

Some people said that the wazungus (whites) have just come to infect us with the virus ….. there was no way of knowing if that is true but we came to realize that they were just rumours (PrEP, Male Widower 40 years old).

Besides the concerns on the composition of the vaccine, there were questions with regards with blood samples collected. These questions revolved around the amounts of blood collected that some community members had said was a lot. The information provided, helped to allay some of the fears initially held out of misinformation. Some of the information as explained by the volunteers included the amounts of blood drawn and the purposes for which it was drawn

They… the outsiders told us that they will take 5 litres of blood but leant that was not the case though the amounts varied from one group to another like in group B and C they took 660ml and in A 540ml (HIVCORE Married Male).

Before I participated, I had fears because back of my mind I used to think that is an HIV virus but with the information and the consent, the education with the staff, I was able to know now that this was not a virus, so at least I knew am safe (B003 Single Male 22 years old).

The information provided was also useful in helping volunteers know what to anticipate at the different levels of participation. A number of volunteers from across the six selected studies were able to give accounts of what the trials they were involved in entailed including included study requirements, eligibility criteria, tests and procedures to be carried out, number

of study visits among others. One female volunteer mentioned that she was happy about the screening and the kinds of tests that she had undergone.

I liked the fact that we tested for HIV; and they are using machines two times, you know these others… I was happy because I will know it very well. Secondly I liked the fact that blood samples were taken to be tested thoroughly not like when you come say you are sick and they just give you medicine, I liked the way they screened us (HIVCORE, Widowed Female, 25 years old, casual worker)

Many volunteered considered trial staffs to be knowledgeable and open about the information they provided. They found the information provided to useful in raising their levels of preparedness on what to expect at various stages of participation. A male volunteer recounted how the information had helped prepare him on what to expect during each trial visit.

The information we were given…was… mostly about the vaccine and side effects. Side effects we were told…okay, it depends with the electroporation you will feel soreness at the point of injection, there also others that you feel chilled because they were chilled…you will feel dizziness that's what were, were told, something like vomiting and nausea tic. (HIVCORE Single Male)

Sure, reason being one, some people could have filled it and maybe they later on…some people fear injections. You are told, we are going to remove your blood like ten tubes others are green, blue you know people get nervous. So just like for me, I had to take courage… because I don't like injections. I used to close my eyes and ask myself -when will they be done with the process. Were it not that we were advised, not to go into this without knowing what will happen, then people would have seen it to be blackmail. But because the of the information and advice, now you don't ask much- what this blood is taken for and why is it sampled in different bottles or begin to say "these people are taking blood do they want to go and donate it somewhere?" (S001 Single Male, Self-employed)

For others the information was important in shaping their sexual behaviors as regards HIV infection and protection. Many volunteers attested to the fact they had been able to maintain low risk behaviors and that they were aware that being in the HIV trials did not mean protection from acquiring the HIV virus.

The information I got there after recruitment was one good counsel, because it was re-

peated time and again, such that even someone who could not understand, was to hear that "the vaccine that you were going to get doesn't mean that now you are being immune from HIV so keep safe ways either abstain or use protection." So at least, that was explained and now people understand what is going on. It is not a matter of playing around here. I took it seriously and it helped me to move to the next level (S001 Single Male, Self-employed)

They said that once you have received the vaccine, you use a condom every time you have sex because if you have without a condom you might make your partner pregnant and yet you do not know how the vaccine will react on the unborn baby. Therefore, we were asked to abstain or use a condom at all times. I can say I have been able to abstain since the start of this study (HIVCORE Single Male Vegetable Vendor)

A PrEP male volunteer as below shared similar remarks that from the information he was able to protect himself and had developed the confidence that even if he were positive he could live longer

The information was very important because I knew how to protect myself and that even if I am HIV positive I still can live many years so long as I know how to protect myself (PrEP Bisexual Male 34 years old)

Discordant individuals found the information useful in helping them live and relate with their infected partners as shared by a male volunteers below

Well I can say it helped me know how to handle my wife who is HIV positive and also it helped the children to suckle their mother you know both of them did breast feed the first one breastfed for six months the second one breastfed for one year and some months. The information was good; it created the confidence in us. (Protocol J Discordant Married Male, 36 years old Sero-negative)

The information received for others served as reminder on the importance of maintaining their negative HIV status in addition to adhering to other trial obligations. One such view was shared by a discordant male volunteer that anytime he was about to engage in risky sexual behavior, the counsel received about personal safety came into mind as explained below.

...the thing that made me happy and would make me want to continue is that it opened my mind, I always think that at times when I have come across a little money, satan wants to take me astray, I remember, "No! There is a study, I participate in at KAVI, and the teachings I get and whatever about the viruses, I stop, I step on it. There is no way, the doctor tells me –"now you are going on well" he does some tests on me, and they are negative, then come tomorrow I am tested positive. And then it is not that my wife has made me to turn positive it is the one from outside" (S001, Married Male, Casual Worker Discordant).

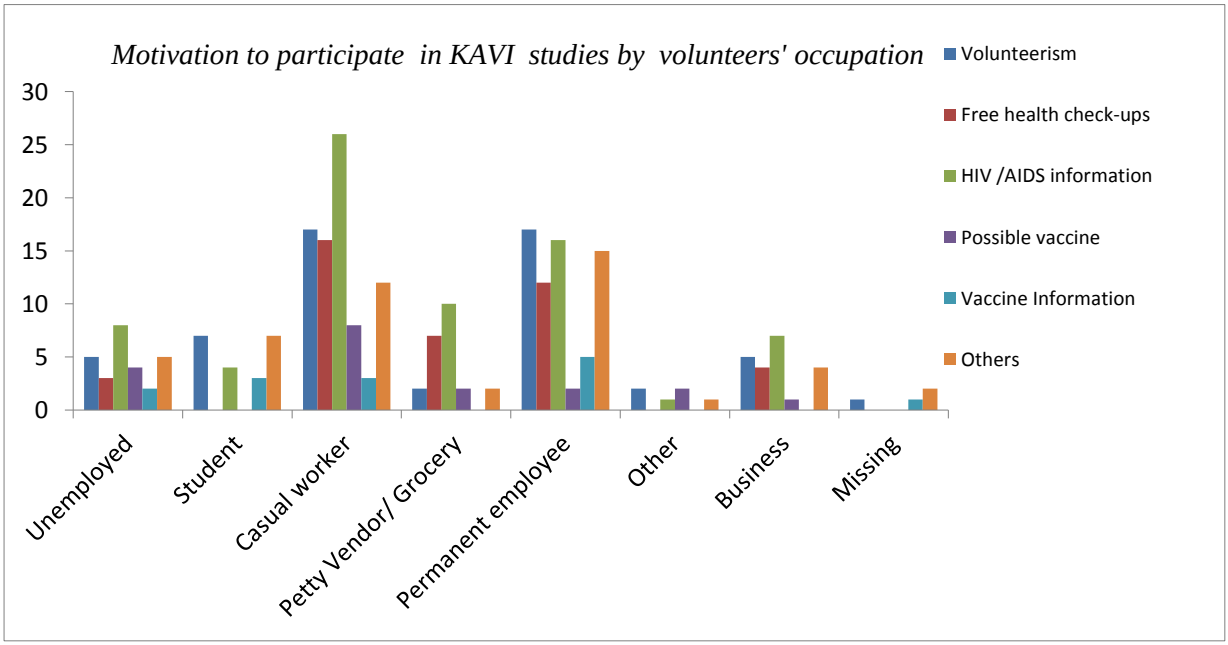
For others the information was beneficial as they learnt on what to if exposed

Okay somehow, I grew, and I came to realize from the study that there is PrEP. I learnt a lot. I can go out and tell somebody who is exposed, that you can go and take PEP…. okay let me say PEP, because PrEP is a trial, after you have been exposed, you can take post pep after seventy -two hours, you can rush to a hospital and get it. The other benefit I got from the study was more about what is HIV (PrEP Divorced Peer Educator, 27 years old)

4.2.3 Motivation to participate

The survey questionnaire asked study participants to indicate what had motivated them into joining KAVI studies. A number of factors were cited ranging from receiving HIV information by close to half of the study participants (72). This was followed by those desiring to volunteer (56) and contribute to treatment discovery while for others it was the free medical check-ups (42) as shown in *chart 5* below

Chart 5: Motivation to participate in KAVI studies by volunteers' occupation



Although from the survey questionnaire voluntarism and desire for HIV information seemed to be ranking high, from the qualitative interviews the free medical screening and being found to be healthy seemed to have been a bigger motivation.

I: So, what motivated you to want to participate?

R: My motivation is that I want to see a world free from HIV, so I knew that maybe I can be that person one and bring a smile to the people that, will benefit from this vaccine in future (B003, Single male 22 years, community Volunteer).

I knew my blood group and was happy about it, I knew I did not have any STIs, no HIV, at least it made me careful as to how I was living my life((Protocol J , Single male 33 years, self-employed)

For out of school youth and the unemployed, participating in the trials gave them a sense of purpose and belonging somewhere as opposed to being idle at home as illustrated by the quote from a 22 years old single male

As I usually say, you can do something instead of sitting. like that I just saw participating as an opportunity to contribute and give good results which will make sure that nobody is dying as a result of HIV, so that is the factor that made me know that I still have a part that I can play in the vaccine study, yeah (BOO3, Single Male 22 years, Community Volunteer).

The data from the in- depth interviews revealed beyond the need for HIV/AIDS-related information, free medical check-ups, the opportunity to volunteer; there were other motivating factors. That not only did participation provide an avenue for gainful engagement, but it was also a source of supplementary income. The unemployed women and low- income earners with dependants particularly saw the transport reimbursement as an opportunity to make savings as well as filling the financial gaps in their families.

The money they give for transport has helped me. When I come here, and I get the transport I am able to buy food for my family. I do not have a job and my husband also lost his job. I even told him to come and join the study and he agreed. He was enrolled last week (HIVCORE married female, unemployed)

For others it was the reception and treatment from the trial staff whom they termed amicable.

> *I arrived at the reception, had some tea, my file was taken out and I was tested for HIV again, and from there my file was taken to a doctor, and that day I think I had a cold and I was given some medicines (Protocol J , Single male 33 years, self-employed)*

Similar views were also shared by a female volunteer from the HIVCORE study, who in addition liked the fact they had been given free will to decide on their participation in addition to the transport reimbursement

> *First, the staff is good and friendly, secondly after coming here, we received something small, fare reimbursement, third is that they allow us to make our decision (HIVCORE, single female, unemployed)*

A PrEP volunteer explained that at the time when the PrEP study was being initiated, the MSM community faced a lot of animosity in the community and for them to be accepted by the KAVI research team was a major motivation to be in the study as illustrated by PrEP volunteers below

> *Okay whoever was there was friendly, and I may say that that time very few people were friendly to the MSMs in a way* (*PrEP, Divorced Male, 27 years, Peer educator, Unemployed)*

On the other hand, volunteers engaging in risk behaviors like the male sex workers in the PrEP study, motivation for enrolment included receiving free medical examinations and receiving negative test results. Of equal importance was also learning about modes of HIV transmission, prevention and risk reduction. They were able to learn about the need to use lubricants to avoid rupturing the rectal membranes in addition to correct and consistent use of condoms.

> *I can say I have benefitted a lot from this study. I now know how HIV is transmitted and as an MSM, I now know to protect myself from being infected by using lubricants and insisting on condom use. At least when we come here we receive free condoms and lubricants (PrEP, Bisexual Male)*

Volunteers found to have minor infections were appreciative of the fact that they received treatment before enrolment. A female volunteer explained that those found to have urinary

tract infections that they were initially not aware of received free treatment and enrolled after healing.

> *When they screened my urine, they found I have an infection, so they gave medicine to clear it. I was happy they had screened me and treated me for something I did not know I had (HIVCORE Married Female 25 years old)*

There was a common belief by some volunteers from the vaccine and PrEP drugs study that the product under study may offer protection from contracting HIV thereby a motivation for participation. This view was common among the MSM community as explained a PrEP volunteer recruited from the OPEN B study. Although this volunteer had participated in the PrEP study, he seemed to think of it as a vaccine study. His misconceptions about the trial product are exemplified by the joy of finding out after un-blinding, that he had not been in the placebo arm but actual drug study as below

I: What motivated you to join the study?

R: The vaccine…you know when you are negative, and you hear of a vaccine; then I just felt it would be very good to protect me against HIV. I knew that after vaccination you could not get the virus just like polio vaccination, so I felt that I could not HIV if I got the vaccine. We were told that there are two types- there is the drug and placebo and by good luck I found out by the end of the study. I was told that, I had received the real drug. I was taking drugs twice a week not daily. I felt very good although they told us that they are not very sure if that drug would work well maybe 80% like the one that was found in Thailand, but I felt very good and I have confidence that it works (PrEP, Single Male 40 year- old).

For others the motivation to continue participating was their significant others. A male volunteer explained that the support from his wife and knowing a friend who had completed had motivated him into wanting to participate to the end.

> *Well my wife gave me heart and told me to go ahead since I had already decided to get in the study. There was a friend of mine who already was in the study and he had completed the whole study so, I felt encouraged also to finish like him (HIVCORE- Married Male 45 years, Gardener).*

4.2.4 Perceptions and experiences with the study requirements

Volunteers considering participation in the KAVI clinical studies had to pass the set inclusion criteria. To participate, potentials volunteers had to provide informed consent, willingness to provide required samples for various tests including HIV as per the study protocols for eligibility screening. Once screened and eligible, willingness to use a reliable method of birth control over a given period (for the males, consistent condom use or partner being on a method), commitment to be available for all study visits and follow-ups as per the schedules.

Volunteers exhibited increased knowledge and understanding of what was required of them as study participants by the ability to recall and narrate various aspects of the studies they were in or had completed from their extent of understanding. Some of the aspects were the types of information provided in the course of their participation including eligibility criterion, study requirements and expectations as volunteers among others as explained by a HIVCORE study male volunteer below.

> *Those who have qualified are those who have undergone screening and found to be okay. They do not have diseases like hepatitis B, any problem with the heart, liver… Then those who are pregnant or planning to get pregnant were not to participate in the project (HIVCORE, Single Male)*

4.2.4.1 The informed consent

The ability to provide informed consent was a major requirement for all potential volunteers before being screened and eventually enrolled if found eligible. Prior to providing informed consent, volunteers were taken through the consent document and later allowed time to carry it home for further reading and consultations where need be. The allowable time varied from study to study with some taking up to two weeks. This was, followed by an appointment for assessment of understanding (AoU) for which participants had to attain a given mark.

Understanding the informed Consent information

Assessment of individuals' understanding of the informed consent is critical for evaluating knowledge and understanding before enrolment. A majority of the volunteers interviewed for this had good understanding of the information regardless of individual levels of educational attainment.

Findings from the quantitative data revealed that over 56.7% of the volunteers had understood the information very well while those reporting to have understood the information well were 35% and less than 8% had average or limited understanding. Chi square statistical analysis revealed differences in the levels of understanding between individuals that varied significantly with the level of education ($\chi 2$ test; p=0.059) as shown in *table 22* below.

Table 22 Understanding of the informed consent by education attainment

Education attainment	**Very well**	**Well**	**Average**	**Not well**	**Totals**
Some primary education	4 3.97 (0.00)	3 2.48 (0.11)	0 0.47 (0.47)	0 0.09 (0.09)	7
Completed primary	18 27.79 (3.45)	23 17.33 1.86)	6 3.29 (2.24)	2 0.60 (3.29)	49
Secondary completed	40 (35.73 (0.51)	20 22.28 (0.23)	3 4.23 (0.36)	0 0.77 (0.77)	63
College/ University	31 25.52 (1.18)	12 15.91 (0.96)	2 3.02 (0.34)	0 0.55 (0.55)	45
Totals	93	58	11	2	164

$\chi^2 = 16.402, \quad df = 9, \quad \chi^2/df = 1.82, \quad P(\chi^2 > 16.402) = 0.0590$

Findings from the qualitative component on the other hand showed that the extents of understanding varied from one individual to another with most finding it to be easy. That whereas for some understanding was a one day's affair for others it required a number of days to absorb and digest the information. Volunteers narrated that before signing the informed consent document they had to show proof of understanding by undertaking the assessment of understanding (AoU) test that could happen after having had time to study the information.

There were various thoughts regarding undertaking the assessment test. A female volunteer explained how she had taken time to read the document and relate the information to what the trial staff told her.

> *I went and sat down and read the consent document and understood it and internalized what I learnt here, and I saw that it is safe (B002, Single Female 22 years, University student).*

The thought of taking the assessment, which for some seemed like an examination, was a source of anxiety resulting from not knowing what to expect as shared a male volunteer below.

> *I had anxiety…..It was a good exam, some of the questions asked were to try and see if you have read the informed consent and understood. (S001, Single Male 23years, stage actor)*

According to the volunteer, the failure to follow instructions and paying attention to read the IC document as told by the trial staff had led to failing the Assessment of Understanding Test.

> *The document was not hard to understand. Only, when I took it, I just schemed through it. That is why the first time, the first visit….I asked told to go back. I had not gone through it well. I had just read lightly through it. However, when I went back with it, and I was serious with it, that is when I understood, but it was not that hard (S001, Single Female 23 years, Untrained Teacher)*

Participants' ability to understand the informed consent document was further expressed through their ability to discuss the various forms of information they had encountered.

> *In the consent, they had explained to us about the vaccine, what they were going to do, inject us with- that it was either a vaccine or placebo. They had explained the risks, procedures to expect, forms of discomfort to experience, risks and discomfort, benefits. All this was in written form, like the right to refuse to participate. (B002 Male 26, employed)*

> *According to the information we were given, they said they said the vaccine is synthetic and they were not using a live virus but just a single protein of the HIV virus (B002, Single Male, 24 years old, nursing student)*

Passing the assessment of understanding and signing, the informed consent document did not necessarily mean that one had understood as it emerged from some participants. Some volunteers reported not having fully understood the informed consent document even after having successfully gone through the assessment of understanding.

> *No, I did not understand it clearly, but I just signed it anyway* (*PrEP, Single Male 31years old).*

Of course, there were parts that were not easy which I cannot remember now because as usual doctors have a way of using terms that are not easily understood by the lay. They tried to explain. (B003, Single Male, Chef)

Some volunteers also talked about difficulties in understanding why some past trials had failed to reach efficacy

The doctors told us about the first trial which did not go well and we were wondering how that could happen but we came to understand why, and though not completely (HIVCORE, Married Male, 45 years old).

The passing of the assessment of the informed consent document for some may result from framing of the assessment questions. It may be that because the assessment questions were in multiple choices of yes/no it is also possible that some volunteers may have applied guess-work in order to pass.

They ask you if either false or true, then you say true or false. They tell you if you pass like 4 questions, you have passed. Now if you have wronged and you have not reached 4, that one now they will tell you later because they ask you if it is true or false and then they count for you. If you wronged, they tell you maybe you have one week to go and revise, if you have passed, they tell you have passed (S001, Married Male, casual -worker).

Yes, I had anxiety…It was a good exam, some of the questions asked were to try and see if you have read the informed consent and understood (S001, Single Male 23years old, stage actor).

Findings from the survey data show commonality on aspects of the information participants, had difficulties in understanding as summarized in the *table 23* below. The volunteers in the vaccine trials (B002, B003, S001 and HIVCORE) had more concerns as compared to their counterparts in the Protocol J observation and the PrEP drug studies. Concerns for those in the vaccine trials revolved around the differences between vaccines and placebos, randomization, scientific terms and vaccine safety. For the volunteers in the protocol J study that was observation in nature, their areas of concerns were around rectal and biopsy samples. The PrEP volunteers had the least concerns that were to do with placebo and if the drug on trial works.

Table 23: Aspects of the information Participants found difficult per study type

B002	B003	HIVCORE	PrEP	Protocol J	S001
Getting the placebo or the vaccine	About trial vaccine	A & B groups	How drug works	Biopsies but later understood	About placebo and the vaccine
If the vaccine or placebo don't work	After the trial I might be HIV positive	About pregnancy	Placebo	Getting flesh from rectal area	About the vaccine
Info on placebo and the vaccine	How the blood was drawn	Blood		Information on protocol	Terms like placebo, blinded , randomization
Info on placebo and true vaccine	How the vaccine will benefit me	Drug being tested		Taking of samples	Meaning of Sendai
Names of vaccine	If they inject the real HIV vaccine	Info on trial vaccine			Scientific terms
Placebo and vaccine itself	If vaccine has real HIV virus	MVA			Titles and meaning
Science behind vaccine	Placebo	No of sexual contact			How one can be vaccinated with a HIV vaccine but test negative
Medical terms	Reaction of the vaccine to the body	Placebo			What they were testing in my stomach
Issue of the vaccine	Scientific language	Randomization, blinded			How the vaccine can make me test positive
Titles of the studies and their meanings	Use of one's body for the study				
Those in the research turning HIV positive	How the vaccine works				
Vaccine given is placebo or real vaccine	How long the vaccine remains in body				

Perception of the informed consent document and consenting process

Volunteers' opinions with the informed consent document were collected. Most of them thought it was okay and that it contained all the necessary information one needed to know about the studies.

That consent had information about the vaccine and its benefit and it contained how our appointments will be and what we are required to do when we come and the amount of blood they need to take. They told us that when we come we would have the benefit of having intensive health checks and that will help us if we are sick they would treat us for free (HIV CORE Married Female)

For others the information in the IC was relevant as they were able to know what to expect when receiving the vaccine- giving them a sense of preparedness as shared by an HIV CORE female volunteer below:

You will receive a vaccine. That vaccine will show if you have soldiers in your body……. After receiving the vaccine….there are others who will feel like vomiting…others will feel like they don't have energy and also your hand will experience shock when you being vaccinated and when they are done they use the other hand for like two times and they go back to the other hand (HIVCORE, Single Female, Hairdresser)

There were varied views on the length of the informed consent document. For majority, the length was okay while for a few it was too long. These views varied from study to study and individuals to individuals with most study participants from across the six studies tending to think that the length of the IC was average as indicated in the *table 24* below.

Table 24 Perception of length of informed consent by study type

	Very Long	Long	Average	Short	Totals
B002	6(16.7%)	4(11.1%)	24(66.7%)	2(5.6%)	36
B003	4(97.6%)	10(24.4%)	22(53.7%)	5(12.2%)	41
HIVCORE 004	4(11.4%)	9(25.7%)	19(54.3%)	3(8.6%)	35
PrEP	1(7.7%)	1(7.7%)	11(85%)	0	13
Protocol J	0	9(47.4%)	9(47.4%)	1(5.3%)	19
S001	1(5%)	7(35%)	11(55%)	1(5%)	20
Totals	16	40	95	11	164

A male volunteer shared that in spite of the document having been long; this eased when the trial staff read it out to them first. The view of the informed consent document being too long, could also be attributed to some people not having time to read it or simply not being interested as seen in the excerpt below.

It was long and that is why they first read it out to us and explained because there are people who are lazy when it comes to reading, and there are those with no time to read. So at least when they brief you about what it contains, even if you missed reading it, one could still have an idea (B003, Single male, Chef)

A female volunteer from the B002 study on the other hand felt that the length of the document notwithstanding it was good for its simple language comprehensiveness.

In terms of content, it was very comprehensive, and in simple language, but it was long, I think it was 10 pages, 8-10 pages (B002, Single female 22 years old, University student)

Volunteers expressed satisfaction with the way they were consented into the studies. They observed that before screening and enrolment into the studies, they had received detailed information of what the studies entailed. Of importance was the fact that they were not forced into making instantaneous decisions but allowed ample time to go home with informed consent document for further reading and consultation where need be. Before assessment of understanding and eventual consenting, volunteers had a period ranging from one to two weeks for decision-making.

It made me feel comfortable.... I was not being forced to participate; it was you either know it or you don't join the study (S001, Single Male, 28 years, Interior designer)

It had everything for ones total understanding, so when you read it… and you remember what the teacher was teaching then you get to understand everything(S001,Married Male, Casual worker)

4.2.4.2 Decision making and consultation patterns

Within the informed consent, personal decision making is critical. To be able to understand individuals' decision- making behaviours and processes, participants were asked if they had consulted anyone before arriving at their participation decisions. Cases of individualised and instantaneous decisions making were reported by a number of volunteers. For some decision making was informed by the type of information provided by the introducers to KAVI studies. One male volunteer explained that his signing the informed consent document had been as a result of desperation and that he had been told that participants could be paid for participation. This is detailed in the quote below:

When we arrived, we received the consent I signed because I was desperate and the promise of getting the money after the study. I thought that I could open up a business with the money (PrEP MSM 31 years old, unemployed, drop-out).

For others, lots of consultations and information seeking had to take place before they could eventually arrive at the decision to either participate or not. Findings from quantitative data revealed that the proportion of those that had consulted was equal to those that had not consulted. Varying consultation patterns were observed across the sexes, marital status and the study types. Of the 82 participants that had consulted 57 were males while 25 were females. Except for the S001, Protocol J, and PrEP study, more than half of the participants from the vaccine studies had consulted with one or more persons as shown in *table 25 below*

Table 25: Consultations by study type

	B002	B003	HIVCORE	PrEP	Protocol J	S001
Yes	19	24	19	6	5	9
No	17	17	16	7	12	11
Totals	36	41	35	13	19	20

The persons consulted and informed about intentions for research participation included parents, siblings, partners, friends and health workers as shown in *table 26* below. There was high tendency among volunteers to consult partners (18.9%) and friends (14.6%) and fewer with siblings and health workers.

Table 26: Distribution of Persons consulted

	Parent n=82	Sibling n=82	Partner n=82	Friend n=82	Health Provider n=82
Yes	15 (9.1%)	13(7.9%)	31(18.9%)	24(14.6%)	7(4.3%)
No	67(40.95)	69(42.1%)	51(31.1%)	58(35.4%)	75(45.7%)

Participants that were single tended to consult more with friends (39.1%) and parents (26%) while married participants on the other hand consulted more with their partners (65.7%) and less with friends or parents. The *table 27* below shows the consultation patterns by marital status and persons consulted.

Table 27: Consultations by marital status and persons consulted

	Parent	Sibling	Partner	Friend	Health Provider	Totals
Single	12	9	5	18	2	46
Married	2	1	23	5	4	35
Divorced	1	1	2	1	1	6
Widowed	0	2	1	0	0	3
Totals	15	13	31	24	7	90

The tendency for volunteers of single marital status to consult parents was also observed by trial staff. Female sex workers and MSM although single and thought to be making individual decisions by nature of behavioural factors, they too consulted significant others. This is explained in excerpt from a trial staff below

> *The way volunteers make decision vary, like the CSW they are single mothers and they are bosses of their own they were just making their own decision the same to MSM and for the Protocol J group B we had two young ones though they met the criteria they had to ask for permission from their parents whether to join the study (KNH Trial staff)*

Although more than half of the study participants were seen to be consulting, the same was not with their decision making. A number of volunteers regardless of marital status and sex seemed to make individualised decisions. For many this was attributed to the information provided during the course of recruitment as shared by one single female volunteer below:

> *I did not consult any one. I accepted because when I came they explained how it (meaning the study) was could be done (HIVCORE, Single Female, house-help).*

Disclosure about intent to participate for many did not translate to influencing decision making. A female volunteer from a vaccine study narrated how she had disclosed to her mother and sibling and received a negative response.

> *I told my mother from the beginning. She told me not to participate but then soon after I moved to Nairobi to stay with my brother and sister. Then I told my sister and she told me she wouldn't advise me to participate but the final decision was with me (B002 Single Female 22 years old, University student)*

A married male volunteer who had told his wife about his interest in participant in the KAVI trials talked of consulting two friends and one discouraged him citing that he may be injected with a virus.

> *Yes, I asked two friends, but one wanted to discourage me saying that we will be given the virus in our body, you know people understand things differently, but I told him that it wasn't bad because it was not only done in Kenya but even European countries (HIVCORE, Married male, 45 years old, Gardner)*

Married males tended to consult more compared to the single males. One of the reasons sighted for consulting by one single male volunteer, was being able to understand the information provided, hence ability to make individualised decision.

> *Well it was a personal decision I did not discuss it with anybody in fact nobody else knows am in this trial apart from me….. (B002, Single Male, 24 years old, Nursing student)*

Besides understanding all the information, for some it was the fear of meeting negative reactions from significant others upon disclosure of participation intent.

> *I did not consult I understood all the aspects. Actually, even my parents do not know anything about this it is a secret. They would have reacted in a bad way that is why I hid it from them (Protocol J Single MSM 33 years old, Self -Employed).*

For the married women non-disclosure to partners was alluded to for fear of being dissuaded from participation and considered decision making as a personal endeavour. They feared that their spouses may not understand their motivations to participate including lack of understanding of the vaccine trials.

> *I have not told my husband about the study because he will not understand…., he would not let me participate. But I told him I come for health education seminars (HIVCORE Married Female, unemployed)*

The fear of being misunderstood by others not participating was alluded to as a reason for non- disclosure and non -consultation for some volunteers

You know the fact that this is a HIV vaccine, the first thing someone asks is what if it backfires, and HIV having had the stigmatization it has had in our society, it can be easy (B002, Single Female 22 years old, University student)

One of the reasons that volunteers sited for not disclosing their participation intentions was fear of being asked to explain themselves and possibly being judged. A PrEP male volunteer whose place in the relationship is feminine also explained his fears regarding disclosure to his partner fearing that he could be asked questions.

I: Why did you not disclose to your partner?

R: It is because I did not want many questions because he would have asked me many questions. He could have brought issues (PrEP Single Male 30 years old)

A number of married males on the other hand had to disclose their intentions to their spouses, right from the beginning. This disclosure for others included sharing the informed consent document so that they too could read for themselves as contained in the quotes below

From the beginning when I was called for the study I told her everything I don't hide anything from her am usually frank with her…. I showed the informed consent, she even read it and told me to continue, (S001, Married Male, Discordant, Casual Worker)

I told her and she did not understand but as we read together she came to understand (HIVCORE 007, married male 37 years old, security guard)

Volunteers' disclosure and consultations about participation for some had resulted into support from those consulted while for others it was discouragement. Males more than females, reported receiving support from their significant others. A male volunteer that had consulted with the sister, reported receiving encouragement to pursue

She just said that if there is anything needing volunteering, then it is okay if I want to participate (B003, Single male, Chef)

For others, the study staff had played a key role in influencing their decision making and this had to do with the information they provided as shared by a B003 make volunteer.

Tell us about the people who played a role in your decision-making.

R: I think the KAVI staff because they educated me, and they made me understand. They told me that, first, the HIV vaccine is not an HIV virus, it is just a vaccine and it is on trial.

They told me the risks that are going with it. You know most of people do not tell the people the risks. Therefore, I was able to know the risks, and I knew I could withdraw at any time, which showed that the issue of my security is covered. Then they told me about, in case I have any other health condition I can just walk in to the facility and say this and this is what I am feeling, yeah (B003, Single male 22 years old).

4.2.5 Perception and experiences with screening

The screening process entailed a number of procedures. This entailed the trial doctor/ nurse reviewing the information provided early on, answering questions; assessing the volunteers understanding prior to their consenting. Upon consenting, a number of tests and medical examinations take place to confirm the health status of the volunteers before enrolment into any given study. Some of the study tests run on volunteers included: HIV Tests, liver function test, heart function and complete physical examinations as per study protocols.

Volunteers from all the six studies shared mixed views and reactions concerning the screening for participation eligibility. For many of the volunteers, never in their lives had they received such comprehensive medical evaluations, which they not only considered as being beyond their reach but the preserve for the rich in society. Receiving free medical check-up for most volunteers was both a benefit and motivation for moving to the next level of participation. Even more exciting was confirmation of good health. Those found eligible but with minor ailments received treatment before joining to participate after completion of treatment. All volunteers were happy and grateful about receiving a full medical check-up, which gave them a clean bill of health. They pointed to the fact that getting full medical check is not only expensive but a preserve of the rich and for them to get it in KAVI was a great motivation for participation. The quotations below are indications of various volunteers' views about screening:

It is good and for the first time, I have had screening for diseases without paying anything. Therefore, I want to continue to see if this vaccine will bring a difference or not (HIVCORE Single Female)

Before joining, you go through screening. I was happy because in other places, medical screening is paid for and here they do it free. We are happy because you know your health status. It is free although you had volunteered but it is helpful because you know how your body is. (B003 Married Female)

Volunteers talked of receiving full information on the procedures that they were to undergo and that even falling sick in the course of participation the trials could take care of their treatment.

The screening was okay because one was well prepared for it, and in any case if a person gets sick and goes to any other hospital, they are not screened, they are just treated what they are ailing from without testing (*S001 married Male)*

…ok before we enrolled they took the height yeah sometimes they would take blood samples at times they would not so for a clinical research blood samples need to be taken or any other sample that the researchers were interested in. (B002, Single male, 24 years old , nursing student)

Through the various procedures that they undertook, the volunteers learnt of their results thus giving them continuous understanding of their health status and well-being.

There are health benefits, like -your blood is screened and told how your kidneys are if you are health or not. For example, I was told about my body, my heart and I knew my health was good. (B002 001 Male Respondent)

The attention was the first support that I appreciated a lot because as soon as they see me, they just know that you are coming. They ask how you are doing and everything then the medical check. You know I had never gone for a urinalysis and so on and blood tests, just knowing your blood grouping. I just knew I just had to live like that but I with that support because I was able to know the level of blood, the issue of my health condition, yeah, those are some of the things that I enjoyed (BOO3, single male 22 years old).

Besides the positive aspects related to screening, negative aspects were also shared. These had to do with fears and misgivings about undertaking various tests and providing samples for the same. For some volunteers, fears were about test outcomes. In spite of getting free medical check-up and screening there were fears about what the test outcomes might mean. Those that had never tested for HIV before were worried about "what if the test is positive?" and for the others there were worries about discovery of other ailments like heart diseases, high blood pressure. The following excepts are an indication of some of the fears shared by respondents

I was scared at first because of the tests but they told me what to expect. The HIV tests

since it was the first time I was being tested (HIVCORE Married Male 34 years old, security guard).

I: What were your concerns about the screening process?
R: I was not comfortable with the blood because the piercing was like every time. I felt like a mouse in a laboratory, but I had already signed the consent form and everything had started, and there are things that you cannot go back or do anything about it, you could withdraw but now, it's good you complete wholeheartedly (PrEP male 27 years, Divorced peer educator, unemployed)

Receiving a negative HIV test result, was buttressed by additional information and counseling on how to stay safe to be able to maintain their status. For many of the volunteers, asked what was propelling them to accept enrolment, they were quick to say that it was the information and that it had increased their sense of awareness and the importance of safe sex.
On the other hand, volunteers engaging in risk behaviors like the men having sex with in the PrEP study, besides the free medical examinations and receiving negative test results there was also the view by some that perhaps the drug may offer some form of protection from acquiring HIV.

I enjoyed the fact that we were together as homosexuals in one place and being taught….. and the fact that I found out that I was healthy after all the screening. I like the fact that I was screened found to be healthy and the drugs could also protect me in the long run (PrEP male, 30 years single, casual worker)

Of equal importance was also learning about modes of HIV transmission, prevention and risk reduction. They were able to learn about the need to use lubricants to avoid rupturing the rectal membranes in addition to correct and consistent use of condoms as explained by one respondent from the PrEP study.

we did attend seminars…….we learnt about the type of risks involved in our kind- the MSM. We also got some benefits like the lubricants, we used to get the KY gel here and the condoms were free, and of course we came to learn a lot, it is like the study was creating awareness on HIV and STIs among the MSMs (PrEP male, separated, Bisexual, casual worker, declined enrolment)

Some volunteers had trouble with providing samples. For one male volunteer giving blood was easier than giving urine which require their being urine in the bladder while for blood it was just giving the arm.

> *The screening process- my experience, you see I was used to giving blood. It was easy, because all I could do was to just, give my arm but for urine, it was hard. There had to be urine in my bladder. It was somehow challenging was like one is supposed to go bring urine and you are not prepared to bring remove the urine sample so it was like somehow challenging(B003 22 year old, single male).*

Some volunteers talked of experiencing discomfort during physical examinations when asked to undress. Men more than women seemed uncomfortable when asked to undress for examination. This feeling of discomfort was greater where the attending clinician was of the opposite sex

> *I felt weird about being asked to remove all the clothes, so they could examine my body and provide history of diseases. They also took blood and urine. It was good since I got to know my status (Male volunteer HIVCORE)*

Fears, anxiety and sense of relief were common experiences for many of the volunteers when undergoing screening. Fears included receiving positive HIV tests, discovery of unknown health ailments, and anxieties of screening outcomes that were marked with *"what if?"*

> *I was a little bit scared of the fact that they were screening for any other diseases; some of which you may have and you do not know. That will definitely shock you, though it was nice because there was a friend of mine, who had this condition of always urinating and I do not know what she was told; but she was given medicines and she got well (B003 Single Female, 26 years, Hairdresser, Drop out)*

A male volunteer from the HIVCORE study who had never tested for HIV shared similar remarks. For this volunteer, his initial fears were resolved by the trial staff, who provided more information and understanding on what was to be expected.

> *I was scared at first because of the tests but they told me what to expect….the HIV tests since it was the first time I was being tested. (HIVCORE Married Male 34 years, Security Guard)*

The fear of how to deal with unknown ailments following screening was really for some volunteers. And these were expressed through a recount of past health experiences and underlying suspicions that would be based on their past behavior as is evident in the following quote from a participant who had dropped out of the study.

> *I was thinking that health- wise, I would get something that was challenging. As at times I would have headaches or feel weak, so I was like, if I don't have the HIV virus, so then what is my problem, you see, so I had those concerns but when the results were out they found I was healthy (B003 Married male 33 years old drop out)*

For others, the fears regarding screening out comes were real, following prior experience with a member of family living with a health condition such as diabetes as explained by this one male volunteer below.

> *Yes, I had lots of fear regarding the result since there is the diabetes in our family and I thought I might be affected but when the results were out and I was clear I felt everything was ok (S001Single Male 011, Self Employed- Interior designer).*

An attitude of wait and see on the test results seemed to work well for those that termed the screening process as uneventful.

> *About the serious conditions, I was not worried because I have never had any serious disease. Nevertheless, you do not know about your health until it is tested. Therefore, I was just waiting (B002 -114, Single Female 22 years, University student)*

4.2.6 Perceptions and experiences with sample collection

Provision of human samples is one of the major requirements for individuals showing interest in clinical research participation. The types, proportions, site of collection, frequency of collection varied with study type, nature of tests and visit type. Blood and urine samples for instance, were commonly, requested for eligibility screening besides collection of blood for various tests in subsequent visits. Mucosal samples were also required for some study protocols with points of collection varying with sex. These are summarized in table 28 below:

Table 28: Summary Table of samples required per study type

B002 : Blood and Urine ; mucosal samples (rectal, cervical and semen)
B003: Blood and urine; mucosal samples
HIV CORE: Blood and urine samples
S001:Blood,urine, Mucosal Specimens: Naso-pharyngeal secretions, Saliva, Oral fluids, Rectal secretions for the males and Cervico-vaginal secretions for the female Colorectal Biopsy Specimens
PrEP: Blood, Urine, Rectal swabs- for gonorrhea testing
Protocol J: Blood and urine, semen, mucosal (rectal and cervical).

Participants expressed mixed reactions towards sample collection and this seemed to vary from type of sample, mode of collection and amounts, and sites of collection. There was acceptance and varying tolerance levels for blood samples as compared to mucosal samples. The latter are collected in sites commonly considered invasive and thus participants raised questions around rectal, seminal samples and sampling. Urine and saliva samples were on the other hand, not mentioned as having presented challenges, though there mentions of sensitivity with nasal sampling.

> *Urine is okay and for mucosal what they said was if you were comfortable they could take the vaginal fluids. However, I was not comfortable with that (B002 Single Female 22- years- old, University student.)*

Male volunteers from studies requiring mucosal samples reported having had concerns with mode of semen collection and the purpose for collection. Semen sampling required the male volunteers to masturbate, a process considered abnormal by a number of them in spite agreeing to go through the process. Unlike blood that is commonly, collected for testing of various illnesses they found the idea of collecting male samples to be uncommon creating the assumption that perhaps these were for sale. A male volunteer from the Protocol J explained his misgivings and had questions for trial staff before he could finally consent to mucosal sampling

> *The semen, on that, I had many questions because you know there were thoughts about the selling of the semen and they explained it in- depth so I could understand, and I did. They convinced us enough and I accepted (Protocol J Male Volunteer).*

The view about selling of human samples also came up among non-mucosal giving volunteers. To some study participants, the issue of transport reimbursement had helped in the construct and shaping of narratives about blood and selling of semen or use in rituals. These constructs seemed to thrive in the community and among potential trials participants that were limited in knowledge. A male volunteer from the PrEP study below illustrates these fears, in the excerpt.

> *In PREP, this is where there was a problem. The blood that they were draining was too much unlike the one for smearing. They were taking many tubes. There was even one who complained that he collapsed may be he had his hangovers and after being drained he collapsed maybe, And there were some people who actually believed that that much blood was taken from us and then sold to the rich people and actually I was wondering why they had to take that much. .....Even me I came to wonder why they needed a lot of blood just for testing. Initially I believed that it was actually being sold but later I realized why it was collected (PrEP Single Male)*

4.2.6.1 Experiences with Blood sampling

Volunteers gave varying amounts of blood at specified time points and given tests. The tests for which they gave blood included HIV, syphilis, Herpes Simples virus (HSV-2), Hepatitis B and C. The DNA PCR HIV testing was in all visits whereas testing HSV-2 and Hepatitis B and C testing were at study entry. Blood was also stored for later date tests as defined in the study protocol. If a volunteer tested positive, the blood collected a previous month's visit, is used to perform a further DNA PCR HIV test. For example, if the month 3 HIV test is positive, the month 2-stored sample was taken for PCR HIV detection. Hematology (CBC, differential platelets) and CD4/CD8 counts were, also performed on the blood collected in all study visits. The details of the amounts collected in various study visits, is contained in the tables 2, 4, 6,9,11 and 13.

Although the blood samples were from adult volunteers, experiences of pain and fear were common during collection. These fears for some emanated from seeing a needle as well as the thought of and actual experience of pain during pricking. For others it was the sight of blood and the number of tubes for collection. This explained in the excerpts from two HIVCORE volunteers below:

I was a little bit afraid at that time but nowadays am used to it….es,before I was really scared, especially when I saw the bottles. I used to wonder if I would fill them up or when they would be filled up (HIVCORE Single Male, Vegetable Vendor)

I got scared when blood was being drawn from me. What could I do I just took courage and they told me everything will be fine. But It was good since I got to know my status (HIVCORE Single Female, 28 years old)

Pain resulting from repeated needle pricks in search of invisible veins was also reported by some volunteers. Two male volunteers reported having experienced pain when veins were being sought for blood drawal

There are so many, minor tests that never end. They are so many until…Then there was a time it was difficult to locate my vein I was pricked twice and it was painful though not as such I was scared. You just see your blood being drawn….. though less than 1 pint it is put in different small test tubes of 8ml, 4ml; 4.5ml makes it look more. At times, they take up to eight or nine. (*B002, Male Respondent, 26 years, Employed)*

In spite of the acceptability for blood sample collection, there was a general feeling from many of the volunteers from across the six studies that the amounts of blood collected was a lot; additionally raising, questions of what else it was being required for.

The blood they collect is usually a lot. Moreover, we have never been told, what they use it for (S001, Married male, casual worker)

In PREP… this is where there was a problem. The blood that they were draining was too much unlike the one for smearing. They were taking many tubes. There was even one who complained that he collapsed may be he had his hangovers and after being drained he collapsed maybe. In addition, there were some people who actually believed that, that much blood was taken from us for sale to the rich people and actually, I was wondering why they had to take that much. .....I also wondered why they needed more blood just for testing. Initially, I also believed that it was actually, being sold but later, I realized why (PrEP Single Male).

A section of volunteers reported experiencing fear, from seeing the amounts of blood drawn during given visits. They explained that although the sizes of the tubes used for collecting blood were small, their numbers were a source of fear.

There was a time I felt uncomfortable because the quantity of blood to be taken was changing at times it would be more or less……. it depended on what they were going to test,….. However, at times it was so uncomfortable because the amount of blood was a lot (B002, Married Male 26 –years-old)

Because of the varying amounts of blood drawn across the visits, for some volunteers, there were feelings of body weakness, faintness and dizziness following collection of blood. To help them cope with these feelings of faintness or dizziness, the volunteers received soda to help re-energize them as explained in one of the quotations below.

After they get the blood, you feel weak. On the first day, you feel weak because the blood they get is quite a lot. ….. I usually give blood and I go and sit down for a while and then I go,…..but when you get outside in the sun, that is when you feel weak…….(laughs)……I have given a lot of blood, even next month I am giving blood again (S001, Married Male, Casual Worker. Discordant)

There was a day I felt dizzy though not for long because they gave me a fanta to drink and I felt better. I am now used because even for my last visit, I gave a lot of blood and I didn't feel it (B002, Married Male 26 –years-old).

An HIV positive female volunteer from the Protocol J study shared that her only concerns with participation, were the amounts of blood drawn. Adding that being HIV positive, she was not always able to afford food and now with the amounts of blood being drawn she had fears that her health might be affected as shared in the excerpt below:

I did not have a problem except for the amounts of blood. That is what started to worry me as it was taken every month. You know sometimes life is hard and one is there struggling make some income to be able to buy food and you are HIV positive, at that point I started to feel that this might affect my life further (Protocol J, 34 -years- old Single HIV Positive woman)

The fears reported for many of the volunteers; however, seemed to wane with experience of being trial participants and knowing what to expect at every given visit after enrolment. A female volunteer shared that though the sight of the number of tubes for collecting the blood was scary, she got used to the process with time.

I was scared, because sometimes we would come, they would take like 10 tubes of blood in 20 ml tubes and that was a lot… of blood, though with time I got used to it, sometimes I used to feel just tired (B002, Single Female 22- year-old, university student)

More males than females reported episodes of fear at the thought of being injected, resulting from the sight of the needles and phobia for injections.

I had to take courage because I do not like injections. I could close my eyes and wonder to myself when the process would end (S001 Single Male, Self-employed- Interior designer)

4.2.6.2 Experiences with Mucosal sampling

In addition to blood and urine volunteers in the Protocol J, S001 (Sendai), B002 and B003 studies were also expected to provide mucosal samples. These included rectal samples, cervical samples, semen, nasal; colorectal biopsies as shown *table 4.20 above.* Given the nature of samples, sampling procedures, and sites of collection study participants were required to provide an additional informed consent. The collection of these samples attracted various views from participants with some consenting and others not. It is a reminder that, consenting at the onset of the study did not amount to agreeing to collection of all samples. There seemed to be more acceptances for the collection of nasal, saliva, and oral fluids as opposed to reproductive and rectal sites mucosal. Moreover, these varied across the sexes, with men showing more reservations with the collection of samples from reproductive area sites. The act of providing the semen through masturbation was not only, considered unnatural but also contravening their sexual practices and religious beliefs. Feelings of discomfort were particularly, expressed by male volunteers, that had declined to give rectal and semen samples.

Ha-ha! To be honest I just felt uncomfortable giving the semen…..I just felt uncomfortable and since there is that right to refuse and nothing will be done to you because you will still enjoy the privileges you had before like checkups….I gave out saliva (B002, Married Male, 26 years old)

Besides being uncomfortable with the idea of providing semen, men who had consented to giving semen talked of having difficulties with the process and resorting to just giving saliva alone. The quote below by a B002 male volunteer explains the scenario.

Did you ever have challenges with providing samples?
Yes, I had challenges but not at screening. During the participation, they introduced an aspect of collecting saliva and sperms. That one was hectic because you see somebody who is not used to just producing sperms like that without having sex… it was challenging. I tried… but it reached a point that it was hard because you could stay in a room for around thirty minutes trying to ejaculate and there is nothing, the sample is like the very little so they said that I just continue producing the saliva which was easy (B003 22 year old single male)

Indications of feelings of discomfort came from few of the women that had agreed to the collection of cervical samples via insertion of the soft cup. One female volunteer explained that while it was not painful, she had felt uncomfortable with the whole process. She added that this could have been harder to deal with if it had been that a male provider was collecting the sample. The excerpt below explains this:

I: Besides blood, what other samples were required from you?
Saliva and if you were willing rectal samples, cervical samples and semen for the men if you were willing; but for me I gave everything… (laughs) for me because I was dealing with a lady I was just ok…..no pain it was just normal though I was not that comfortable but since I was willing to participate and it was voluntary so I had to. But I was not that much comfortable when they were inserting those things in me but I was not forced to (B002, Single mother, 27 years sales lady)

Another female respondent shared similar sentiments of provider gender preference in the collection of mucosal samples. To this female besides the general discomfort during the collection process, she was able withstand the whole process because in attendance was a female provider lessening the feeling of invasiveness as explained below:

I was not feeling bad, but there are those like rectal, as in, they are not comfortable, and then the soft cup, putting it in is usually uncomfortable. The good thing is that for me the doctor that was doing it was a woman…I used not to mind it. I did not see if there was much problem ...even now, I prefer a woman (S001, Single Female, 23 years Teacher)

Unlike the collection of semen and cervical samples, volunteers that gave rectal and colorectal seemed not have had challenges. A male volunteer shared from the Sendai (S001) who had given both rectal and colorectal biopsies samples, and described the process as having

been painless, attributing this to the way it was conducted

> *There was not any effect, no pain. There are tools that they use to collect samples. The tool is like a gun that they put behind you and they have two sponges and plastic and that sponge they pass it through that gun then they swap. Takes about five minutes (S001 Single male)*

Describing the process of colorectal sample collection, a male volunteer from the S001 study found it to have been painless as one is semi sedated.

> *For biopsy, they collect samples from the wall of the intestine to see if the vaccine has any effect on the wall of small intestine. That takes place in the lab, where you are injected with some sleeping medicine when you are asleep the procedure takes place. You are given some pills to take which help you to clean the intestine… you are given the day before so when you come tomorrow you are clean so there is no interference with the procedure. There is no pain because when they are doing it you are not aware of it. After entering the lab you are injected with sleeping medicine; there is a tool, which they insert into your anus and it goes directly into the small intestine (S001 Single male)*

Although the process of collecting the rectal samples was described as painless, for some volunteers the after effects were undesirable. A male volunteer from Protocol J described his inability to engage in sex following rectal injury after the collection of the samples, a situation that had raised questions from his wife.

> *……when I leave the house I have to tell her where I am going and what I am coming to do over here. You see, like when it came to giving that biopsy sample, there was no way that I could go home and be intimate with her if she wanted. Although, I did not experience pain when they were cutting the pieces, they left me with an injury that had to heal. …… I tried to explain to my wife that what I am doing will not make me it possible for me to have her but that made her think that maybe I had met another woman that is why I don't what to do it with her. So, when you find yourself not being able to explain to her why you cannot meet her demands it is like you are may be having affairs out there (Protocol J Married Male HIV positive, 39 years, security guard)*

Besides the discomfort with having to give semen, there were other negative effects such as

postponing partner sexual demands. A male volunteer with the Protocol J study recounted his experiences of having to abstain from sex at least three days before the day of sample collection to be able to have successful masturbation. For fear, that he may not satisfy the wife's sexual needs the volunteer, explained he had to find a way of not being sexual.

> *Then the other problem was for giving the sperms. For me to be able to come and give the sperms, I had to avoid sexual intercourse with her for at least three days. And you see because this one required getting it unnaturally; the same after that act of the clinic I had to find excuses for not engaging with her so that I don t have to explain why I can't satisfy. That was hard period for me- for me three days before the visit and three days after the visit I had those challenges (Protocol J Married Male HIV positive, 39 years, and security guard)*

Even though providing mucosal samples was an option, it served as a reason for some volunteers to decline enrolment as shared by a Protocol J male volunteer below

> *I declined to join the study because I did not understand how I was going to be able to give semen ...masturbation is against my religion (Protocol JMarried Male)*

On the similar note, a male volunteer from the B003 shared his reservations about providing mucosal samples. Describing B004, an ongoing study at the Kangemi trial site which he was not volunteering in but had information about, said he had been shocked by the requests for mucosal samples as described below.

> *No, I did not. The one I had problems with was the B004 study because the samples that are being requested. <u>They are samples that are so difficult to provide.</u>*
> *<u>They were many like sperms and you ask yourself how these will be gotten surely. And then there were rectal samples- that were shocking</u>. I cannot remember well but there was a way they said they could insert a gadget through the anus to get the sample. I tried to figure out that process and I found it hard. (B003, Single Male, Chef)*

4.2.7 Perceptions and experiences with contraception requirement

The use of a reliable method of family planning is a requirement for both men and women desiring clinical research participation. Due to the uncertainty of what effect a trial product may have on unborn baby, individuals are to postpone their fertility plans by adopting a

method of contraception if they are to be volunteers. For the men there was to be consistent condom use for all sex encounters or have their sexual partners use a reliable method.

While both men and women are required to adopt a reliable method of contraception, women more than men seemed to have concerns with this requirement hence being a source of decline to enrolment in trials. One female respondent from the B003 vaccine study said that consulting with her mother had led her to question the aspect of mandatory use of family planning arguing that it will predispose one to promiscuous behavior

> *The part where they were saying that they should inject us with the family planning contraceptive, she did not like that part, She had refused; she argued that if one is injected with the contraceptive it would promote promiscuity. Actually, I also did not want it. I could not have accepted to have the contraceptive injection if I had been enrolled although they were insisting, that if you are a woman it is a must (B003 Single Female, 26 years old, Hairdresser, Eligible declined enrolment)*

This same female further explained that besides her mother's fears, she too had fertility concerns since at the time of enrolment into the study, she was not married and using a method of family planning was not going to be in her best interest.

> *Before then I was not married, I was thinking when I go there then (hesitates) I did not want to use family planning then I quit. Yes, I was given an appointment and the date when I was to come for the enrolment and I did not show up as it was the date I was supposed to be given the family planning. Therefore, I chose not to come… I was afraid of being on family planning before having a family, so I was thinking I should at least have a family. Now I am not worried, anything can be done, and at least I have a son now (B003, Married Female, 26 years old, self-employed –Declined enrolment).*

A male respondent that had declined enrolling into the HIVCORE study added that her fiancé and his mother had been concerned about the delay in child bearing and held fears about possible future effects to unborn child

> *I had wanted to participate but my fiancé is worried the vaccine might affect me. She has even told my mother (HIVCORE Male Single Male, declined enrolment).*

A trial staff further confirmed these lingering concerns from individuals about potential nega-

tive effects on fertility and side effects following the use of contraceptives. To the trial staff this one causes of low enrolment into clinical trials. According to the trial staff, female volunteers were particularly concerned about delaying fertility intentions, side effects of the birth control methods, and for some they had to consult their male partners. Young women who had never been pregnant were concerned with possible side effects that may result from the use of the methods such as fear of infertility. Those were sexual inactive or virgins were more apprehensive about the family planning method use.

The requirement for females to use a family planning method has been a problem affecting our enrolment. You will find that among the women who may be interested in participating in the trials there will also be young girls some are virgins some have never had children and this myth that if you use FP before you get a child you will never get one…so we have been having drop outs(trial staff).

Women that had never used a method of contraception before had concerns about its reactions. One woman who had never used depo- provera complained of health- related changes.

It was horrible, it was the toughest time …, and it was very horrible. I was sick, I was very sick; I could not even add weight. I think for a year. Then when I came …… they had to stop it. Yeah it affected me because I just used to feel so bad; you know the side effects of contraceptives. I do not know if it was in my mind, I do not know. But, I used to feel so bad. I could get nausea…and for a long time, until I had to stop it. II came here when I was sick a certain time, I had to call them, that time I was in Kisumu, so I had to call them , and they told me to come, then they took me to a gynecologist and then they told me to stop the DEPO (B002, Single Female, 22 years old, University student)

Another female volunteer explained that upon start of the method, she experienced heavy bleeding that lasted for a long time, weight gain among, and backaches. To counter to the heavy bleeding she was given pills were not tolerable as they made her sickly and she had to discontinue, because of the added negative effects

The DEPO brought problems. The flow could not stop, the doctor gave me tablets so that I could be using…, now those pills, even those I had refused but they told me- instead of using pads every day, even when you are uncomfortable, you use this tablets because there is a way it stops (S001, Single female, Employed)

Besides concerns about possible side effects, married women in particular had to contend with decision of disclosing to their partners about intentions to use a method of family planning if they were not already on one. There were fears that disclosing participation intention and the requirement to use a method of family planning could lead to friction and possible discouragement from participating. Those that were however, on a method already found it easier to make decisions without consulting as explained by this one female volunteer from the HIVCORE study below

> *I did not have a problem with a method, my husband is not expecting another baby soon as we already have two I did not consult with my husband before deciding….. if I had then I could have to explain that I want to participate in the vaccine study. I know he could have refused me to attend. I know him. (HIVCORE, Married female, 25 years old, Unemployed)*

Participants that had already achieved their desired family sizes or were on a family planning product on the other had fewer concerns relating to the use of family planning. A male volunteer in the HIVCORE study explained he did not have a problem using a condom to prevent a pregnancy with his wife besides they had no plan for having more children

> *My children are all grown and we are not planning to have other children. I didn't have a problem with being asked to use a family planning method because my wife is already using and she is aware of my participation(HIVCORE Married, Male 45years old Gardener)*

4.2.8 Perceptions and experiences with enrolment and trial participation

Volunteers shared varied views and experiences with the trial visits such as the lengths of time and procedures across the different study arms. They observed that enrolment visits were particularly longer than most subsequent visits as for some it doubled up with receiving the study product. A series of procedures and activities are carried out that include information medical reviews, randomization, blood draws, briefing on future trial visits, receiving trial products and observation. The randomization process through which volunteers are assigned study arms, was web based. It involved key in a participant's number to the dedicated online platform to receive notification on which study arm to place a volunteer.

> *I was told to come on the day of vaccination. Then I was told…eeeh, I was called on a day like today to be told which vaccine the computer chose or the vaccine which I will get (S001, Married Male, Casual Worker).*

Overall volunteers found the enrolment process to have been good and helped them to further understand what study participation entailed.

I think the process of enrolment was good as, enrolment was after one had understood. For example, you could be like ten people ten friends but end being the only one enrolled. May be the other person refused- because of you know people change mind even at the last minute, others maybe their medical conditions that, only the doctors that know, yeah. So I think it was very good because they did not just enroll for the sake of enrolling, they enrolled you because they knew the importance of you participating in the study and they took care of us a lot because we are the most important people in the trials (B003 Single Male 22 years old)

Following the knowledge gained during the information seminars, some volunteers seemed to form ideas in what study arms they could have preferred to fall under. While for some volunteers it didn't matter which study arm they were randomized into for others it did. Those preferring the vaccine arm were of the belief that if the trial product was to achieve efficacy then they will be proud to be the first to have received it, while for others it was the believe that it may offer some form of protection against HIV acquisition as opposed to receiving the placebo which was referred to as water. Those preferring the placebo were of the opinion that it presented minimal or no risks in case of trial failure.

I did not like the fact that I got the vaccine, I was really praying that I get the placebo. Because it is a vaccine and it is on testing, and it just got administered in your body. (B002, Single Female, 22 years old University student)

Other reasons cited for randomization preferences included the number of trials visits and types of procedures involved. Volunteers that had concerns about opportunity costs seemed to prefer arms that had fewer visits with those that saw participation as an opportunity to benefit from the transport reimbursements had preferences for arms that had longer trials durations. On the other hand, volunteers that had fears about the amounts of blood drawn had preference for arms that were drawing less blood**.**

I understood the plan about the grouping yes it also made me have some fear like if you hear that some will be given water and the ones for real vaccine and some will also be given through electricity and its fearing. (HIVCORE, Married Male, 35 years old)

4.2.8.1 Perceptions and experience with receiving study product

The day of receiving the trial product for many of the volunteers was the epitome of trial participation. Volunteers participating in the vaccine- based studies shared, that before receiving the study products they had hidden fears of the unexpected indicating that they were not sure of what going to happen to them or how the bodies were going to react. Except for the experiences of pain with being injected, many of them reported normalcy in the body systems contrary to what they had feared as described by the female volunteers below:

> *What was your experience with receiving the first vaccine?*
> *There was nothing except for the pain from the injection. I had thought I was going to get unconscious and wake up. The only thing that happened is that during those first days I got the vaccine I was sick, because the vaccine came along with contraceptive, you had to go through, and if you were a woman, you had to receive a method of contraception. (B002, Single Female 22-years- old, University student)*

> *Well the injection was painful, but we did not see any effect because they had told us that once you receive the injection, you call to say if your body is cold or you itch or maybe you can diarrhea that is it might affect you. However, when we were injected, the hand could feel some heaviness, but it did not cause any bad effect but we would come for checkups (B003 Single female, 48 years-old, casual worker).*

The fears relating to receiving the vaccine also had to do with the mode of administration. In the HIVCORE study, for instance, there were two modes of vaccine administration namely the convectional injection mode and via electroporation. A number of volunteers viewed the delivery of the vaccine via electroporation with mixed feelings. For some, there was the wish to be randomized into the arm that had electroporation while for others there were fears, hence the wish to be randomized into the arms that were through injection delivery. Those desiring electroporation talked about the possibility of having a new experience of drug delivery. Those that hoped for injection mode of delivery reported the fear of being in contact with electricity.

> *I had some fear about electricity when I realized I was in that group C, you know these things done by electricity, I was afraid but then after getting it, I did not see it as bad as I thought (HIVCORE married female)*

Volunteers in vaccine based trials and those in drug trials had various experiences with the study products. These experiences further varied with arms randomized into, mode of product administration including number of study visits. Part of the information given to volunteers was what to expect upon receiving a study product. These information included experiences of pain, fevers and general malaise; headaches. The occurrence and intensity of these experiences, they were informed could vary from person to person and study visit. In case of severity of the after effects, they were to call or return to the clinic for evaluation. A male volunteer from the HIVCORE study explained his experience as below

> *When I got my first vaccine? After the first vaccine I was okay, when I received the afterwards, I felt pains here and there, I always felt tired but then after sometime the pains and tiredness faded like after three days. I was not worried because we had been told to expect some pain - that after the injection that one would experience some pains, the muscles too would have pains (HIVCORE, Single male, Vegetable Vender).*

Volunteers generally experienced pain differently. For instance, volunteers randomized into group B of the HIVCORE talked of experiencing intense pain on receiving the last vaccine. One male volunteer randomized into group B of the HIVCORE vaccine trial shared experiences of pain resulting from the different vaccines received on the different visits. For this volunteer the last vaccine received (MVA) was particularly painful and he could have dropped off the study, if it had been the first. His experiences are documented in the narrative below:

> *I have taken the whole of this participation with a lot of commitment. There are times I felt I wanted to quit like from when they tested my heart and they found that am healthy I felt able to go to the next level and when I got the first vaccine I felt pain and with some dizziness but considered that to be very normal and took the second injection this where I started to experience the pain. The third I did not feel much pain but the fourth I felt a lot of dizziness. The fifth one made me feel a lot of hunger and had to eat a lot to give myself strength so I do not fall. It made one feel so worn out. You see I was in group and in Group B we were getting five injections, one injection every month and every time both arms were injected. What I can tell you is that when i reached the fourth one, I was on the verge of quitting but I remembered that this whole study was just volunteerism and I decided to take it till the end. Now the fifth was the worst it was called MVA if they had started with that I would never have gone ahead with the study my hand was so painful I*

could not lift anything and I just slept holding my hands. But I had been informed in advance about what to expect so I was psychologically prepared (HIVCORE, Married Male, and 45 years old gardener)

Fears relating to safety and potential long term effects of the study products were shared by some volunteers in the studies with a product. A female volunteer with B002 study explained that in spite of being assure of product safety, she continued to be worried about what the future implications may. These general feelings were aroused by the caveats that were attached to participation such as not getting pregnant during the course of participation as the effects on the unborn child were unknown

You know when it comes to matters of health, and you are a human being and not a rat, in a laboratory you really get scared when you are told that there is something that is being tested and it's administered in you, then you have to be observed for the next, I don't know five years. Because you don't know how this thing is going to really react. You don't even know the effects although you have been told that it has been tested I don't know elsewhere, so I was quite afraid (B002, single female, 22 years, University student)

Perceptions and Experiences with PrEP drug

The volunteers in the PrEP drug comprised of men having sex men (MSMs). Although being a high-risk population they had to be HIV negative to be eligible to participate in the study. Like volunteers in the vaccine trials, they too had concerns about possible side effects resulting from use of the drug in addition to what people might say about them if found to be participating in the study. This is evident in the following quote:

Yes the effects that the drug has… and the perception of people when they will see us take those drugs. Those drugs if somebody could get you taking them … would wonder which type of drugs they were … They were blue and big and people thought they were drugs like cocaine or some even thought we were HIV positive (PrEP Single Male 40 years old).

The fear of being mistaken to have HIV was apparent in a number of volunteers in the PrEP study. One volunteer described the challenges he encountered having to hide the drugs from his brother and having to explain to him why he was on the drugs if discovered.

I: Why did you have to conceal the fact that you were taking these drugs from your brother?

R: Because he could have thought, that I was infected. The drugs were blue and very big so when he saw me take the drugs he thought they were for AIDS. I had to explain to him because he thought I was into drugs or that I was infected. (PrEP Male 30- years-old)

Another volunteer explained his concerns with the study product was to do with the potential risks of taking drugs in the absence of disease and the potential side effects

I: What were your fears?
R: My fears were about taking pills and yet you are not sick did scare me but I later overcame the fear (PrEP Single male, 34 –year- old, Bisexual)

I: Tell me about your fears with the trial product
R: At first, I had that fear about the effects of the drug but I reasoned that these were doctors and in any case they would treat me still and when I asked, they assured me of the same (PrEP Male 40 years old).

4.2.8.2 Experiences with trial visits and schedules

The volunteers had varied experiences with the trial visits such as the lengths of time and procedures across the different study arms. Volunteers observed that enrolment visits were particularly longer than most subsequent visits and for some it doubled up with receiving the study product. On the enrolment day, a series of procedures and activities take place that include medical reviews, randomization, blood draws, briefing on future trial visits, receiving trial products and post vaccination observation. The excerpt below from a male volunteer gives accounts of the events during a typical trial visit

Please tell me what you have been through today
R: When I came, I went to the doctor who taught me a gain. I was, informed that they would take my samples once again. I then went for tea after which I went to the lab and they took about ten tubes of blood. Then there were some refreshment, after that I was told I would be vaccinated. First I would be randomized personally I wanted to fall in group C but I didn't I fell in B. I got one vaccine but on both arms. I have learnt how to take the temperature and a diary to write down what I will feel. I have, been told whom to contact in any case there is any problem. After the vaccination I rested for about 30 minutes and the doctor asked me questions on how I was feeling (HIVCORE, Single Male Student, 28 years old)

The randomization process according the HIVCORE volunteers involved online communication with study sponsors and is dependent on internet connectivity. One female volunteer reported the following:

Tell us what happened after signing the informed consent?
R: I went to receive the vaccine but before that I was counselled again, they had to take my blood, and then wait to know what group I will be put. This is where I stayed for a long time as the doctor me to wait for my number to be given the group – the network was slow (HIVCORE, Female, 25 years old, widowed, casual worker)

After receiving the vaccine, the volunteers were observed for a number of hours for any post vaccine reaction before being released to go home:

Well the visits were not taking long, the only one that took a long time was the first vaccine visit, because you are given a vaccine then monitored for around four hours but the consecutive visits were not that too long.(B002, Single Male, 24 years old , Nursing student)

Unlike other scheduled site visits, the day for receiving the trial product attracted a long period of stay at the trial site. According to the volunteers, on this day, up to five trial staff, performing various aspects could see to them.

For this visit I have seen about five providers, the first one repeated for me the previous teachings and also reminded me what we were to do today, the second one examined me, took my temperature, weight, the third took my blood and urine to check blood sugars. The fourth gave me the vaccine while the fifth took my temperature, weight and pressure (HIVCORE, Married female).

Although volunteers could negotiate on time scheduling, those that were engaged in formal employment or were in school, faced challenges on keeping up with the trial visits. Besides the enrolment day, and the first vaccine day being long, the visits that followed were very close. Although they did not require long periods of stay at the trial site, they were closely scheduled and hence demanding on time off work. The quotes below are a good illustration.

There were not many challenges except sometimes you could come early like 8 am and you are expecting to be done by 9 so can go to school but you get delayed (B003, Single, Chef)

Because you want to make it work…. it forces you to get here at 8 am but you leave here at about 11 am. Then the day of vaccination, you can spend here the whole day because you can leave here at 2 pm. Those days for coming for the visits were close. If you keep on asking for permission there is way they take you, that at least the challenge. (S001, Single, Female 23years old, Employed)

The follow-up visits on the other hand, were more relaxed as they were as few as twice a year. The amounts of blood drawn during these visits, was also lesser as compared to what was drawn during the product visits.

4.2.8.3 Perceptions of trial benefits

To gain understanding the potential influences of participation benefits to decision making to participation, study participants to describe what they perceived as benefits of their participation. These benefits as discussed by the volunteers ranged from the information they had received regarding HIV/AIDS and how they can protect themselves; access to free medical screening for various ailment, free medical care in the course of participation and remuneration to cater for their transport and time spent at the trial sites. These benefits had served to meet individual needs at varied points. To one male volunteer from the HIVCORE study, the knowledge that he could walk to the trial site whenever he felt sick and receive treatment without having to pay was a benefit in addition to receiving transport reimbursement as below:

The benefit is when I come here when I am sick and explain to the doctor then the doc will give me medicine for free and may be fare (HIVCORE, Married female, Vegetable vender)

Although the transport reimbursement was a benefit, for some it did not attract as much attention as the medical care provided. Considering that transport reimbursement only happened on scheduled visits and receiving medical care whenever sick was not limited, this for many of the volunteers was of greater benefit as contained in the quote below

I will not say that the reimbursement was not of benefit but for me the most and the actual benefit was receiving free medication and that's something that you cannot easily access and it cost people a lot of cash to get tested on such things (HIVCORE Married Male 45-years-old, Gardner)

Tied to the healthcare component was the continous screening and medical monitoring.

Although this geared towards meeting study goals, volunteers were upto date with their health status as shared by male volunteer from the B002 male volunteer below

There are health benefits like your blood is screened and told how your kidneys are if you are health or not. Like I was told about my body, my heart and I knew my health was good (B002, Single Male).

Another male volunteer added that although he had not fallen ill during the study period, he was appreciative of the continuous medical monitoring he received

The benefit that I received and I still receive is the medication, medical attention although am not that guy that becomes sick always. From the time of vaccine until now, I have never used any drugs or any medication (BOO3, Single Male 22 years old).

This general feeling had resulted from the benefits they had accrued as a result. These benefits for most of them, was information, which ranged from HIV/AIDS information to that vaccine development. There was a sense of confidence about knowledge about HIV and clinical research experienced growth among the volunteers. With the information received, many talked of having the abilities to share the information with their peers an event that has potential to increasing community awareness and possible acceptance to join future trials.

Many questions that I used to have about vaccine and we used to ask with other friends ,so I am able to go down and disseminate the information and tell them this and this is happening (BOO3, Single Male 22 years old).

Because of the information received, there was a feeling of empowerment among many volunteers to the extent that even within their communities they could be able to educate others trials and encourage them to join future trials

Well one of the benefits I have gained is the wide knowledge on HIV and AIDS and now at least I can teach someone on the topic and the other benefit is that transport that we always get (HIVCORE, Married female, 25 years old, unemployed).

For every trial visit, volunteers received a reimbursement of a sum of Kshs. 1,000 to cater for their transport as well as time lost while at the trial site. Although this money may seem insignificant, for some it served to meet various individual needs as such boosting family incomes and additional capital to small business ventures. A male volunteer in the HIVCORE

study explained how he who was able to re-stock his green grocery business.

It helps one do other things. Like for me, I am a businessperson. I sell my stuff in the kiosk, so I can use that money to restock my business (HIVCORE 006, Single Male Vegetable Vendor)

Yeah, I think because in the first place because you are told you are not supposed to be paid to participate, it volunteerism so I think that transport can get me from far, maybe I don't have credit I can buy credit, yeah. so I can say the benefits motivated me because there are some other places that you go not necessarily going for the vaccine trials maybe you are going for other activities, nobody has given you the informed consent. Then, you are not even, reimbursed of your transport. (BOO3, Single Male 22- years- old)

4.2.8.4 Volunteers understanding and perception of Risk

As a requirement all participants were provided with adequate information about the possible risks of participation in the given studies as summarised in the *table 29* below

Table 29: Summary of Risks associated with Participation

Study Name	Nature of Risks and discomforts
B002	• Pain, dizziness, redness and/or swelling of the skin, bruising and rarely infection as a result of blood draw. • Mild flu-like symptoms such as chills, tiredness, muscle and body pain, headache, sweating
B003	Short period of dizziness, pain, bruising and rarely infection after blood draw. **Risk of study vaccine** lasting a few days: fever, headache, chills, general tiredness, muscle pain, joint pain, nausea, vomiting and local pain, tenderness and swelling at the vaccination site. Upper respiratory tract inflammation Unknown effects of the vaccine on an unborn child if given to a pregnant woman
S001	**General vaccination risks:** headache, chills, fever, nausea, muscle aches and joint pains, dizziness and fatigue may occur few days after vaccination. Immediate allergic reactions, including itchy rash, low blood pressure, fainting, sudden swelling of parts of the body or difficulty in breathing. Allergic reactions can be life threatening (anaphylaxis) study staff were there to observe the participant for at least two hours after each vaccination **Potential Risks of Ad35-GRIN:** administered by needle injection in upper arm muscle. Mild or moderate pain and tenderness at the site of injection, chills, fever, malaise, headache, myalgia and joint pain.

	Potential Risk of SeV-G (NP): administered by nose drops**.** May experience symptoms in nose or mouth and throat such as pain, runny nose, sneezing and voice change; difficulty breathing, coughing, headache, muscle ache, joint ache and general tiredness **Women:** unknown effects of the vaccine on an unborn child if given to a pregnant woman **Potential risks of collection of mucosal secretions:** Nasopharyngeal secretion collection may cause discomfort during procedure-(coughing, sneezing, gagging or irritation) Genital and rectal sample collection one may feel embarrassed or uncomfortable, mild discomfort or irritation **Social Risks:** may be discriminated or stigmatized, loss of relationship
HIVCORE 004	Vaccine was already used in UK and several similar DNA vaccines have been tested in humans HIV-1, malarial and cancer studies) and has been shown to be safe. **Short term effects**: temporary ache around the injection site, redness, pain, swelling, itching, bruising, warm feeling; flu like symptoms such as fever, chills, muscle aches and pains, headaches, nausea, dizziness, and fatigue; allergic reactions such as itchy rash, low blood pressure, sudden body swelling, serious breathing difficulty, light headedness and fainting; False positive results on HIV -1 tests
Protocol J	• Risks associated with blood draw included: pain and bruising as result of needle prick in the arm; dizziness or faintness • Mucosal samples collection may: discomfort during the rectal or pelvic exam when doctors puts in scope to view vagina or rectum lining; discomfort at insertion of soft cup aspirator • Accidental puncturing of rectum wall, bleeding, abdominal pain and infection upon biopsy collection • Increased risk of HIV acquisition with sex encounter when rectum has not healed upon biopsy collection • Invasion of personal space: questions about sexuality and examination of private areas
Prep	Pain, bruising and rarely infection as a result blood sample collection No known risks of using the drug by non- HIV infected volunteers.

Source: Extracted from KAVI-ICR trial informed consent documents

Besides being given the information on what to expect upon receiving the study product, the capacity of volunteers to observe changes in their health was built. The capacity building entailed teachings on how to take temperatures, take measurement on the swellings following a vaccine and record details in the memory aid book. Also recorded, were any negative outcome like headaches.

Although a number of volunteers did not have a good understanding of the science behind the development of the vaccines, from the information received, they were aware of the possible risks associated with trial participation as *shown in table 4.21*. This awareness and how it influenced their perception towards participation varied from one individual to another, from one sex to another, and from one study type to another. Within the studies for instance, there were those who viewed the risks as minimal, others no risks, for some there were minimal or no risks. Although the volunteers had been told of the risks associated with participation in the studies they were being recruited into and that their participation was voluntary, there were those that had enrolled amidst holding fears about risks, as questions of "*what if"* lingered on in their minds. There were a number of views for this disconnect. These ranged from their prior notion about HIV clinical research and information held and shared within communities, the information provided by trial staff regarding possible risks of participation and volunteers obligations. For others it was based on the information they had received from those that had introduced them to KAVI studies, while for others it was based on knowledge and observation of those who had participated in other trials or their own individual experiences of participation in past trials. For some participants, it was drawn from the relationships that had been built with trial staff resulting into trust.

Some participants shared that prior to contacts with KAVI, they had held the notion that the HIV vaccine drug was being derived from a real virus and that KAVI was injecting volunteers with the virus. These notions however seemed to change with information provided. A number of volunteers found the risks of participation to be very minimal to warrant any worries. This general feeling for some could have been attributed to their abilities understand the information provided based on levels of education and field of specialisation as shared by a nursing student in the following statement:

> *Ok- according to the information we were given they said that* ***the vaccine is synthetic and they were not using a live virus but just a single protein of HIV virus****.... and for the risk, well it was* ***a minimal risk*** *so I brushed it aside because they said that the chances were minimal for* ***it had been tested in rats*** *I don't know whether it was rats or pigs (B002 Single Male, 24 years old, Nursing Student)*

For some the information provided about possible risks had created a lot of fear and mistrust of the vaccine and questioned motives of the trial staff. The information included volunteers

being advised not to go for HIV tests elsewhere except at KAVI as they may turn out to be positive- *'false positive"* depending on the machine used. Volunteers wondered how a test could turn positive, if one had not received the virus in the vaccine. For some, this created some level of mistrust on trial staff and vaccine safety. One volunteer narrated that in spite of the information received and rationale for not taking a test elsewhere she still did.

> *As a volunteer, you were encouraged not to test HIV outside KAVI. They say the effect of the vaccine may trigger, I don't know what, so that when you test outside, those ordinary test kits for HIV will just show there is a virus in you, but if you come here, I don't know they will use which method of testing so that they are sure whether you have it or not.* ***I had concerns, when they told us we were not supposed to go and test outside. I had suspicion that maybe this guys are administering HIV virus in us….*** *According to the way they explained everything to us, it was imperative that I trust them but I went for the tests…. in fact I tested every year and the results were always negative and I thought I had a placebo (B002 Single Female,22 years old, University student).*

In spite of the underlying fears about possible risks of participation, for some of the volunteers, having committed themselves to volunteer seemed like a sense of obligation and they felt that they were obliged to complete the study. One female volunteer who had had challenges with use of family planning and questions about "false Positive test results" shared that in spite of this she felt obligated to go on with the study

> *When we joined the study, they were clear that if we agreed to join we would have to be available for the visits, so I knew I had a part to play in it. ((B002, Single Female, 22 years old, University student)*

Knowledge about their being minimal risks did not deter some volunteers from raising concerns about the longevity of the trial products in the body system and potential future harm. These concerns were resulting from the information provided about unknown risks of the drug to the unborn babies in case of pregnancy while in the trial.

> *Because this is a vaccine that is on trial….you have volunteered to take part in it. If it succeeds, it will be good for you; but what if it does not. Yeah, what if, something just comes up in it. How much will you be affected? I thought that as much as up to this point that we are being told that, this and this is happening, or this and this is safe, we are still being*

tested on it. So you cannot be so sure, but if it goes well, good for you, but what if it does not go well (*B002, Single female, 22 years old, University student)*

The fears about possible side effects did also extend to significant others who in return had influence on their decision making to participate in the studies. Two male volunteers in vaccine studies shared how their partners had expressed misgivings about the safety of the study products resulting in their non-enrolment in spite of eligibility.

Okay the fact that they said that they did not know how it was going to affect an unborn baby- she was fifty (50:50) about it. She said it was tricky, but I convinced her that I was working with safe hands and that trials have happened in other places, of which people are fine, so there was no way it could be in effective. She was like……, and then also, about the status, since you are given a replica of a vaccine, so she was like what next, she was like "what if it turns out to be the real thing? You see, how will we handle the situation after wards?" She had her own questions, so I came back and asked (B003, Married Male 33 years drop out)

This perception was attributed to the trust and confidence they had towards the trial staff. For many volunteers, trial staffs were not only knowledgeable about the trials but had the ability to communicate the information in simpler and effective ways for understanding. The fears about the risks seemed to wane off with seeing/ observing past volunteers or those that have already received the vaccine living normal lives. Personal experiences upon receiving the first dose of the vaccine and still remaining normal provided an impetus towards study completion.

Okay, before I participated I had fears because back of my mind I used to think that is an HIV virus but with the information and the consent, the education with the staff, I and was able to know now that this was not a virus, so at least I knew am safe. Yeah. (BOO3, Single Male 22 years old)

4.2.8.5 Volunteers' expectations and future participation Intentions

In order to understand volunteers' future intentions about trial participation, participants were asked of what they thought of their overall participation experience. This question was followed by their willingness to participate in future studies and if they could be also recommend trial participation to other people.

For a number of volunteers across the six studies, positive remarks were shared concerning trial participation experiences. Contributing to the good experience, reference was made to the benefits accrued during the course of participation.

I: *What can you say about your overall experience of participation?*

R: Mine was good because I got a certificate and phone plus the fare I used to come I could still get it (Prep Male 30 years old).

Willingness to participate in future studies

A number of volunteers expressed willingness to participate in future studies as well as telling others. Of the 139 that said they could participate in future studies, 70% were males while 30% were females. About 8% of the volunteers showed unwillingness to participate in future studies as shown in *table 30* below.

Table 30 Willingness to participate

	No (164)	% (100)
Yes	139	84.8
No	13	7.9
Don't know	8	4.9
Missing	4	2.4

The failure by KAVI to convey trial results was said to be a possible deterrent in participating in future trials. Adding that there was no value for participating in studies where feedback could never be communicated as shared in the excerpt below

I: So, would you be willing to participate in another study if, you are approached?

R: It would depend on which one, yes I like participating so much, it will depend, anything that can help another person, I think I can participate. But if it is something that I would never get the feedback, I don't see the need of participating (Prep Male 27 years, Divorced)

Reiterating to the concern about communicating study findings, a male volunteer in Protocol J study had this to say

The follow up would be that the information they got from us, the conclusion they came up with, they probably should have shared it probably through email, or through some books they compiled or files, they should have shared the documentation of what they found out. (Protocol J 33 year old, Single Male, Self Employed)

For a number of the volunteers their expectations were to see the trials work and that a vaccine is found. With these expectations they expected to be given regular updates on how far the search for the vaccine had reached. A lack of communication on the part of KAVI regarding progress made was not well received by some volunteers who felt as if they had only been used to achieve the numbers. This is explained by a PrEP volunteer below.

I: What were your expectations after that?
R: I was expecting to know what happened after the trial, and the follow-ups. I think that they should come back to us and tell us what they have learnt from the trial and they tell us the experience and all that, they never came back, although I was far away they never called and they had my number… I felt used. It was like, I had been used; because if someone was in a trial I think, whatever came up later, you should call me and tells me this is what we came up and we got (PrEP 27 years old Divorced Peer Educator).

Similar views, were shared by a male volunteer from the B002 study

If you could please tell me about your expectations of participation
R: Of course, my expectation is that at the end of the day we have a vaccine. But before we get there we need to know what is happening. KAVI needs to tell us what they found out in the trial (B002, Single Male 28 years, University Graduate).

Although fewer volunteers expressed unwillingness to participate in future studies, the requirement for women to use contraception was mentioned by a few women to be a possible hindrance to participating in future studies. A female volunteer from the B002 study in her response on whether she could be willing to participate in future studies lamented that her experience of trial participation had not been good as there was too much demand for time and this was coupled with the unpleasant experiences of using a method of family as was required by the trial. These sentiments are documented below

Now based on your past experience would you be willing to participate in another study?
R: No.. (laughter) ...no, no…..I think this is just enough experience. I did not enjoy the whole experience. It was hectic! Those side effects, especially with that method of family planning- constantly you have to come here, yeah. Sometimes you have exams but you just have to come, because you know that you made a commitment, sometimes it is hectic and

if you look at the worthiness of this course, you are not sure whether to smile or not (B002 Female Volunteer 114, Single 22 years, University student)

4.2.8.6 Summary of Key findings

This section of the findings looked at the volunteers' perceptions and experiences of clinical research participation. Some of the factors that were found to have an influence on how volunteers perceived and experienced the phenomena of clinical research participation included

1. Information: Many of the volunteers found the information provided at the information seminars to be not only informative, educative but also very important in informing their course of action.

   High levels of understanding of the information provided was observed among a number of volunteers as shown by their ability to describe the studies they had been enrolled into. In spite of this there seemed to be lack/limited understanding of some of the trials aspects such randomization, placebo, false positive and a number of scientific terminologies.

2. Volunteers' perceptions and experiences with the informed consent varied. Although volunteers were very appreciative of the informed consent, as it meant that their rights were protected, it also emerged that not all volunteers took time to read as required. And that passing the assessment of understanding did not necessarily mean understanding the whole process of participation in the new study.

3. Decision making patterns of volunteers from across the six studies varied and it was guided by factors such as gender, marital status, personal motivations, and perceptions of risk and trust relations among others. Although the proportion of those that had consulted with the significant others was equal to those that had not, decision making was an individual matter. Some of the factors cited for none consultation included fear of being dissuaded, fear of social costs such as stigma, family disruption.

4. Perceived and actual benefits of participation were of importance to some participants. These benefits included health care, monetary benefits through reimbursements, risk reduction support and knowledge gained from information shared.

5. Trial requirements had an influence on individuals' perceptions and experiences. Varied concerns were shared regarding the samples collected for the various studies.

These concerns were around blood and mucosal samples such as semen. Some volunteers were seen to question the rational for the amounts of blood being collected. Narratives regarding KAVI selling blood and semen were said to exist among members of the community.

6. Risk perception varied among volunteers and with type of study and gender. Volunteers in the vaccine studies seemed to exhibit high levels of fears with risk as compared with those in the Protocol J and the PrEP as they had lesser trial demands. The fears expressed were to do with the long- term effects of the trial product, its impact on future fertility intentions.

7. Many volunteers said they could be willing to participate in future trials if found eligible. On the other a few of them however said they may not if due to trial demands

4.3 Factors that enhance and /or constrain clinical research participation experience

In this objective the study sought to understand factors that had enhanced and or constrained individuals' participation experience. The study participants shared a broad range of factors that had positively impacted on their experiences as trial volunteers. Some of these included handling at trial site, relations with trial staff and benefits accrued from study information, free screening and medical care, transport re-imbursements. Those that had negatively impacted on their trial experiences included trial requirements such as meeting trial appointments, collection of samples, use of contraceptives among the women, risks as relates to trial products.

4.3.1 Enhancers of clinical research participation

Volunteers from across the six studies offered several factors that had enhanced their participation. Among those mentioned were the information received in the course of their participation, freedom and capacity to provide informed consent, their relationship with trial staff, confidentiality of personal information, trial benefits such as free screening and receiving negative HIV- test results, being declared health from other diseases as well continuous health monitoring in the course of participation and post, receiving transport reimbursements. Other factors mentioned were flexibility with scheduling trial visits and psychosocial support from significant others.

4.3.1.1 Standard of care

The volunteers from all the six studies indicated that the standard of care offered by KAVI trial sites was impressive. This had to do with the way they were received and treated by the trial staff right from the reception area to all other areas. The volunteers from all the six studies described the trials staff as not only being friendly and but also qualified professionals who maintained their confidentiality. They found them to be easily approachable, willing to listen and provide guidance.

Both the clinical staff and support staff were said to be warm. Many volunteers observed they always felt well taken care of. To be able to make it for the trial appointments many of the volunteers reported that they had to leave their homes as early as 5 am in to beat the traffic jam and be the trial site by 8 am. For many of them, this could mean leaving their homes without having had breakfast. Those that worked as night guards could come straight from work to the trial sites for their appointments. The decision by KAVI to offer them tea on arrival was very much appreciated. This meant that they did not have to walk out to look for something to eat in between being seen. One female volunteer that had enrolled with two of her sisters indicated that she always looked forward to the appointment days because she could have breakfast as she sometimes went without it due to the meagre family income.

> *The attention was the first support that I appreciated a lot because as soon as they see me, they just know that you are coming then they ask how you are doing and everything then the medical check, you know I had never gone for a urinalysis and so on and blood tests, just knowing your blood grouping, I just knew I just had to live like that but I with that support because I was able to know the level of blood, the issue of my health condition, yeah, those are some of the things that I enjoyed (BOO3, single male 22 years old)*

Staff competence was mentioned as a factor that had enhanced many volunteers' experiences of clinical research participation. For many volunteers, the staffs were not only knowledgeable in the work that they did but were also open with the information they provided. Not only did they provide information but were always available for consultations.

The non- discriminatory attitude of the staff was said to be an enhancer to individuals 'participation experiences. Staff attitude was mentioned as one of the factors that had enhanced volunteers' experiences of research participation. Not only were they found to be non-

discriminatory, friendly but also approachable. Volunteers, especially those from the MSM community that were participating in the PrEP study felt accommodated, adding that they were treated with dignity and respect.

I may say that at the time, very few people were friendly to the MSM in a way but when we came here, things were different. The staff was friendly, there was no stigma, discrimination or something of that sort, or backbiting behind someone's back, there was not. The staffs were very friendly and they answered everything that we asked. They also asked questions because some people were also quiet during the whole thing, so they could ask if you had understood because there was no point of keeping quiet and then later you come back to us and say this and this (*Prep Male, 27 years, Divorced, Peer educator, Unemployed)*

The staffs were good; they talked to us in a friendly manner and with respect (HIVCORE, married female.)

The relationship between the staff, the interaction and me was good and they were always available. And the care they give us has helped me to continue participating (HIVCORE. Married male, 37 years, Security guard)

I: So then, what contributed to your experience being good?
R: Well the staff is fun…what can I say…well the staff is…Mmmh the best word… they are people you can relate with. Yeah let me say that so every time you come you feel that you are part of something, something good ….for something productive yeah… (B002, Single Male, 24 Years, Student)

The staff were said to be accommodative and sensitive to participants needs. Volunteers with limited knowledge and understanding of the English language found the information in Kiswahili useful in helping them understand trial aspects. The use of both Kiswahili and English language was found to enhance individuals experiences with understanding the information provided. Volunteers talked of being able to cross check the information from both languages for ease of clarity and understanding.

4.3.1.2 Preparedness

Knowing what to expect at various stages of participation had enabled them to know what to anticipate and as such there were no surprises. According to the study participants the trial staff had made all efforts to inform them what to expect during all trial visits. Besides being informed verbally, the information was also documented as such they were well aware of what to expect at each visit. This sense of preparedness was observed by their abilities to narrate what they expected to undergo or had undergone in the various trial visits and what was expected of them.

Part of the preparedness approach was through building their capacity to capture any health occurrences after receiving the trial product. The volunteers explained to take their temperatures and to measure swelling in the surface area where they had been injected (for those receiving the vaccine). These data was collected at specified times and recorded in the '*memory aid' (see detail under definition of terms on pg. 2)* which is a trial participant's diary for recording post vaccination experiences as specified by the given trial. With this awareness they also knew what situations could be considered serious and call KAVI staff or go to the site for medical evaluation.

> *After the first vaccine I just rested, when I went home I felt those pains and recorded in the memory aid, they then called me to check on how I was doing and I told them I was doing just fine and I came here for the second visit (HIVCORE, Single male, Vegetable Vendor)*

Aspects of the informed consent were also said to enhance individuals' experiences of participation in the trials. According to study participants this included being able to provide informed consent free from coercion, being assured of their confidentiality and that their participation was voluntary. These attributes meant they were not being taken advantage of perhaps because of their status but instead from the information provided they were able to make informed decisions.

> *The information helped me because you understand what you are getting into you just don't get in blindly plus we were told you are not paid so you just get in out of your will (B003 Single Female, 27years old, domestic worker).*

Having the knowledge that they were not bound to the studies for some was an enhancer to participation experience. This was due to the fact they knew that they were obliged to end their participation any time they wished and could not be victimized for their decisions.

What was good was the freedom of participation because it was not like just because you got enrolled you are closed there, no I had freedom of expression I could just come and ask a question and it is answered very clearly. The staffs were also transparent; they said that in case the vaccine study can bring some reactions it can be stopped immediately, so you know that there is transparency and everything (B003, single male 22 years old)

4.3.1.3 Receiving free medical care

Being able to receive free comprehensive medical screening before enrolment, continuous health assessment and receiving free treatment whenever sick was said to have enhanced a number of volunteers' experiences of participation. They talked of not having to worry about meeting their health care costs for the period they were study participants because all they needed to do was to walk to KAVI and be treated. If they were too sick, all they needed to do was to call. They didn't have to worry about trial product related symptoms as KAVI could take care of this.

From the information we got, we didn't have to worry…about whatever you were taking and perhaps you fall sick, you would be treated, those were the things that we were told. We could be treated free of charge without paying a coin (Laughs). I was happy because I saw I would be well taken care of as volunteer volunteering for the benefit of the society, I was okay with that and of course that meant free medical…….even if it was a cold or I was coughing, I was treated for free (PrEP Divorced Male, 27 years old, Peer educator, Un-employed)

At least, any time you got sick they were ready to test you and give you medication, I came here several times when I was sick, because they used to tell me anytime I am sick I should just come (B002 ,Single female, 22 years old, University student)

R:It has benefit in that any time am sick I run this side for free treatment plus they always give us fare which is good(B003 Female Divorcee, 36 years old)

Receiving good health status result was said to further enhance their experiences with participation. At the point of being screened for trial eligibility a number of volunteers explained that they had held fears about test outcomes. Those that had never tested for HIV- for instance worried what the results might turn out to be. Being confirmed not to have HIV and other serious ailments was a major boost. The requirement of maintaining an HIV- negative

status in order to remain in the trials was an incentive for behaviour change as noted by in the excerpts by the male and female volunteers below.

I knew my blood group and was happy about it, I knew I did not have any STIs, no HIV; at least it made me careful as to how I was living my life. (Protocol J Single Male 33 years old, self- employed)

I: And those benefits were they encouraging you to continue to participate or?
R: Yes, they were encouraging me because for example like the one for my status, they were encouraging me because when I come and the take blood and they test it. If there were any disease that has developed, they would tell me. At least even now, when they take at least I know the response of the vaccine in my body (S001, Single Female 23 years old employed)

Study participants talked of continuously being screened and followed-up. For many of them this gesture was important as it meant that the trial staffs were interested in ensuring they were healthy enough to continue participating as well as monitoring the effects of the study products. It made them feel they were not alone and were valued. These follow-ups were made possible by being assigned a trial staff that could call to find out how they were faring on especially after receiving a trial product. In addition to being called they were given air-time to facilitate their calling in case of need.

They said if I get any health condition, in the course of participation, I have to come here so I can get some assistance. They have given us a number to call in case of any problem and they will be calling me to check if I am ok.,…and of course…. we are given credit to call if I have any difficulty and if it's severe they will come for me. (HIVCORE, married male, 37 years old, Security guard)

4.3.1.4 Transport Re-imbursement

A sum of Kshs. 1,000 (about USD 10) was given to the study participants for every scheduled visit to cover their transport costs to and from the trials as well as compensate for the time lost from their engagements. For many of the participants the money did not only cater for their transport in meeting trial appointments but also was a major booster in enabling volunteers to meet trial appointments. In addition to catering for their transport for most of them it served in supplementing household income. One female volunteer from the HIVCORE trial

said this had been a major benefit to the extent that she had to encourage her unemployed husband to also join the study. On the same note, a single female volunteer that had joined a study with her two siblings narrated how they had found the transport re-imbursement to be really beneficial in meeting their personal needs as they were unemployed.

I: Can you tell me the benefits it has on your life
R: So benefits the first one is that I know my status, I know my condition, also the transport, you know Kibera is not that far, so there is the way they are giving that transport. You will not use all the transport; you will also sort yourself out (S001, Single female 23 years, employed)

What is it that made your participation easy?
There was some little money and again I did not use my
own money for fare, so coming to the study, they were taking care of those things, so I did not have to put up with going back to my pocket (PrEP Male, 27 years, Divorced, Peer educator, unemployed).

I: Ok those were your worst experiences, in terms of benefits, what would you say are the benefits of participating?
R: The only good thing about participating was knowing one's health status. Because every time you come they test you for HIV, they test pregnancy they test … I think that is the good thing about …the positive side of it (HIVCORE Single Female, unemployed).

One female volunteer explained that she and husband were not employed and being in the study had really made a difference in meeting some of their financial needs to the extent that the husband also joined the study.

Joining this study has helped me. I do not have a job, so the money I get for transport I use it to support my family. I even told my husband to also join, because he lost his job. He was enrolled last week. Now at least for the period we participate, it will help us (HIVCORE Married Female Unemployed)

Being study participants provided an opportunity to make savings to start up business ventures. One female respondent talked of having been able to buy some hair dressing appliances like blow-driers with the hope of starting a hair dressing business.

Well I will continue coming because I wanted my saloon and if I continue coming I will achieve it. From what I have been getting I have been able to buy a blow drier. Now with the remaining visits I can buy a few other things to enable me start a small business (HIVCORE, Married Female, 25 years old)

Others said that they felt compensated for their time especially where one relied on casual work for a living. After a day at the trial site one could go home comfortably knowing they had some money to buy food for their families.

4.3.1.5 Social/ Familial support

For some volunteers, knowledge of individuals that had participated in past trials or were currently participating was reassuring on matters of safety and thus a motivation for those deciding to join trials. Some of these individuals included friends, neighbors or relatives from whom they were able to draw social support whenever they needed to commit to retention.
For one female volunteer from the B003 her source of strength to go on with the study was the assurance from her a sister who had been a past volunteer and consultations with the trial staff as explained below.

Ok I had a sister who had participated earlier and when I asked her if she experienced any problem, she said no; so that gave me the strength to participate. In addition, when I arrived here they still taught me on how am supposed to behave, the doctors became my friend and that helped me a lot. (B003 divorced female, 36 years old)

Knowing friends that had participated in past trials and yet not experienced negative effects was important indicated in the excerpts of two male volunteers below

Okay, the fact that my friend … had joined and he told me there were no side effects that would scare me (HIV CORE, Single Male, 21years old, and Self Employed)
How did you feel after the vaccination?
R: I had asked a friend who had already been immunized and he told me that he was just ok, so I was ok too because that mentality of fear was no longer in me (S001, Married Male Casual Worker)

4.3.1.6 Having or not experiencing the said possible drug effects

From the information that had been provided in the informed consents, volunteers were prepared for certain product related side effects such as feeling nausea, fevers, and any unknown

signs. Not having experienced any or minimal after drug effect was a sigh of relieve for many of the volunteers. This also gave them an impetus towards trials completion as their initial fears of after drug effects had not manifested.

I: *What made your participation experience smooth?*

R: I think it is because I never felt sick, except for nausea, and whenever I saw even a pimple, I could immediately call (laughing). I was healthy all through the trial (Prep Divorced Male, 27 years old, unemployed Peer educator).

4.3.1.7 Summary of Key findings

This section of the findings looked at factors that enhanced volunteers' positive experiences while participating in the studies/trials. Although these factors varied among volunteers, some were common as highlighted as follows:

1. Volunteers felt adequately informed of what the trials they were participating in were about, and what their obligations as trial participants were. Based on the information provided, volunteers showed high levels of preparedness for the procedures they had to undergo.
2. Being confirmed health following the screening for eligibility generated positive experiences for a number of volunteers. Those that had never tested for HIV before were particularly happy to receive negative HIV results.

   KAVI 's commitment to provide the volunteers with health care during the course of their participation and post vaccination helped to absolve health related fears as well as reduce the burden of health care access on individual and their households. Volunteers talked of walking into KAVI whenever they were sick and getting free treatment.
3. Interpersonal relations built between the staff and the volunteers had helped to build trust in the clinical staff as well as KAVI as an institution. Volunteers felt valued by the nature of treatment they received at the trial site and the follow-up systems for their health and safety.
4. Knowing and relating with others who had participated in past trials provided a source of encouragement
5. Receiving transport reimbursement was a major booster in ensuring that they attended all trial schedules as provided. For some this money helped to cover up for daily wage loss and as a source of income.

4.3.2 Constraints to clinical research participation

Participants in this study offered several aspects which they believe had constrained their participation experiences. These factors varied from study to study and among individuals. Some of those mentioned included potential risks and fears of unknown such as sera conversion, limited understanding of clinical terminologies, randomization expectations, trial requirements such sample collection, use of family planning methods, time and opportunity costs.

4.3.2.1 Fears about long terms effects of study products

In spite of volunteers having been assured of the minimal effects of participation, persistent fears about possible ill effects/ fears of *"what if*" were observed among some volunteers**.** These fears were more apparent among a number of volunteers in the vaccine based studies and a few of the drug study volunteers as opposed to those of the Protocol J volunteers that had no product but were only under observation. According to some volunteers, there was a lot of uncertainty as to how long the drug on trial could last in the system.

> *My only worry is about long time effects, we were told it depends on your genetic makeup. Sometimes it can work according to that time, that period you have been given and others it can go beyond that but we were told there are follow ups still after the maximum period you are given expires. So, that was my only worry (HIV CORE, Single Male, 21 years old, Self Employed).*

In spite of having been assured that the vaccine did not contain the HIV virus- some volunteers seemed to have the fear it could be lazed with the HIV virus. This fear was heightened by the fact that they had been asked not to test for HIV at the VCTs as the test may turn positive. A male volunteer with the HIVCORE study explained his persistent urge to walk into a VCT centre to ascertain his HIV status

> *I usually think of going to the VCT to be tested but later just decide not to and that I should just finish the study then later get tested to see if my status is negative (HIVCORE Single Male, Vegetable Vendor)*

For some these fears had resulted into randomization preference as shared by a female volunteer from a vaccine study after the un-blinding:

> *I kept asking the trial staff, are you sure this thing is safe, then she used to tell me it is safe…. I didn't like the fact that I got the vaccine, it is still on trial and it just got injected*

into my body. I was really praying that I had gotten a placebo. (B002, single female, 22 years old, University student)

4.3.2.2 Trial demands and procedures

There were high rates of retention and adherence to protocol requirements as reported by a number of volunteers enrolled in the six studies. In spite this outcome, some volunteers felt burdened with meeting trials demands such as giving samples, fulfilling trial appointments and, use of family planning methods. Among the PrEP volunteers fears of being found to be taking the pills and being assumed to be HIV- positive were mentioned.

I: What challenges did you experience during your participation?
R: Only the ones of hiding my participation from my partner and also having to explain to my brother (PrEP Single Male30 years old)

What I did not like is the screening part of being asked to remove your clothes. They had not said we could be asked undress they had just said we should be prepared. And even if they should examine people they if it is the males they should be checked by the males and not a female. Everything else was okay apart from that one being asked to undress to be examined. (HIVCORE Single male, Vegetable Vender)

Use of family planning methods

In this study, women more than men reported negative outcomes with the use of family planning methods in order to delay pregnancy. Some of the negative experiences reported included heavy bleeding, weight gain, weight loss and nausea. By contrast men never reported challenges with using condoms except perhaps having to negotiate use with partners which had no health implications.

Negative effects with the use of birth control methods were found to have affected some of the women who reported poor experiences with trial participation. Cases of heavy blood loss, weight loss, weight gain, nausea were reported by the women that were using depo-provera for the first time. A female volunteer talked about her experiences with being on a method that had resulted to irregular menstrual period with heavy blood flows, being put on the pill in order to regulate menstrual period, unforeseen cost for buying sanitary wares.

For almost two months, it was not ending, every time it was about to stop it started again. Therefore, you could not stay without wearing pads. It was just wearing pads every day

and….the costs were on me because they gave me once, but you know the other visits I was not coming every day. So, the others I was just buying, so when I came to explain to them- when I went for the second one, they gave me pills. I was not comfortable with those pills, now, I used them a little bit then I decided to stop. (S001, Single Female, 23 years old, Employed)

To this participant, use of the family planning method had also affected her ability to engage in daily activities as she had continuous backaches and feelings of tiredness

It tires your back, you back aches, even when you do small amount of work, you feel very tired, it increases your weight, mmh it is not good as in even when you bend a little bit, you feel tired , the back aches. Then, it increases your weight… My normal weight was 77 but now it is range 83, 85 there (S001, Single female, 23 years old, Employed).

4.3.2.3 Pain and Discomfort with Samples Collection

Experiences of pain and discomfort resulting from the type and mode of sample collection were reported by a number of volunteers. Experiences of fear and pain were reported by volunteers from across the six studies. Instances of pain and fears resulting from blood draws were reported by a number of volunteers. Although these experiences seemed to wane with time some, for others they did not. Instances of heightened pain were reported in cases where the veins were invisible. This experience had led some volunteers to wish they had been randomized in study arms with fewer visits as expressed below:-

If it was in my power I would have chosen A because there injections are few and even amount of blood varies since in A the blood is 540ml while C the blood taken is 660ml so you see the difference.(HIVCORE, Married Male 34 years, Security Guard)

A sense of helplessness was expressed by some volunteers when it came to giving blood samples as indicated by this one female volunteer

I got scared when blood was being drawn from me. What could I do I just took courage and they told me everything will be fine. But It was good since I got to know my status (HIVCORE, Single Female, 28 yrs old)

The issue of blood, I think they were taking a lot. If they could get just a little bit; and we have never been told what it used for (S001, Married Male, Casual- Worker Discordant).

Although high levels of acceptance were reported with collection of some of the mucosal samples, a section of voluteers indicated having had to go through feelings of emotional and physical discomfort. The rectal, semen, and cervical samples were particilularly said to be invasive. Volunteers that had not consented to giving these particular samples similarly reported having experienced emotional discomfort with the thought of providing these samples more so the processes of of their collection. One female described her experience with cervical samples as embarrassing:

Inserting the soft cup was cumbersome, I also used to find it embarasing even when the doctor is doing it…. Although the only good thing is that it was a female doctor (S001, single female 23 years old).

4.3.2.4 Time constraints and opportunity costs

Although a number of volunteers were able to find time to meet trial appointments, instances of long waiting times were reported by some volunteers. The frequency of the trial visits at the initial stages of enrolment were found to present challenges to some volunteers especially those that worked in the formal sector or were students. Concerns regarding time are evident in the following quotations:

I: And what did not make you happy in all that recruitment process?
R:The thing that did not make me happy is when you come…. you arrive here, there are so many people, and it forces you to wait, and you know, where I am coming from, at times I have to ask for permission. I end up being delayed from here and getting back late to work. When I go back, there is a way they take me. So time wastage on my part was a challenge (S001, Single Female, 23 years Teacher)

R: Yes, the challenge is between my work and coming to this place that was the challenge even if we did not have to stay for long also the fears of the blood samples that you might have the virus and that you do not have it (Protocol J Discordant Married Male, 36 years Seronegative)

For some volunteers, logistical challenges resulting from having to use more than one vehicle to get to the trial site.

I was living in Dandora and there is direct transport from there to Kangemi, so the connecting could take time … then the traffic jam. Sometimes I could take 2 hours or more,

then coming here, sometimes I would find so many people before and I would wait and wait (B003, Single Male)

4.3.2.5 Summary of key Findings

This section of the study findings looked at what the constraints to clinical research. Volunteers from across the six studies found the following to be a hindrance to their clinical research participation

1. In spite of volunteers having been informed of the minimal effects that may occur as a result of use of study products, a number of volunteers that had participated to the end still seemed to have fears regarding long term products effects.
2. Pain and anxiety resulting from fear of needles were reported in this study. For instance many of the volunteers talked about the pain they had to endure with the frequent collection of blood samples which for some was considered excessive.
3. Physical and psychological discomforts were reported with the collection of mucosal samples. The idea of masturbation in order to be able produce semen was said to be uncultural as well as against religious orientation. Women on the other hand indicated that they had experienced discomfort during the collection of cervical samples more so with the use of cytobrush. Poor health was also reported among some of the women that had used a method of family planning.
4. Fears about being discovered to be participating in the KAVI trials were also mentioned by some volunteers. These fears were more common among married women and volunteers in the PrEP study where some reported not to have disclosed to their significant others that they were participating in the trials. The PrEP volunteers for example had to take their pills in secrecy.
5. Time and opportunity costs were said to be a major issue especially to those that were in permanent employment and students.

CHAPTER FIVE
DISCUSSION

5.1 Introduction

There is limited understanding of how volunteers perceive and experience clinical research participation, particularly in an African setting. This study was premised on the following objectives: - 1. *Describe the characteristics of individuals who participate in clinical research 2. Examine individuals' perceptions towards clinical research participation 3. Examine volunteers' experiences at various stages of trial participation and their potential impact on decision making to participate; 4. Identify factors that enhance and /or constrain clinical research participation experience, 5.Explore similarities and differences of participation experiences among volunteers in the various KAVI-ICR studies.*

Drawing from the behavioral-social science framework developed by Lau et al., (2011), the phenomenological theory espoused by Hussler 2001, and use of the mixed method phenomenological research approach to data collection, I discuss the emerging aspects of the study findings and how they interact to influence individuals' perceptions and experience in clinical research participation and decision-making.

This chapter overviews the study contributions in understanding clinical research participation experiences from the perspectives of the volunteers by considering four key aspects of the Lau et al., (2012) social behavioral framework namely (i) individual factors (ii) community factors (iii) clinical research site factors and (iv) the macro environmental factors.

5.2 Study contributions to the Social Science frameworks and methodological approaches

This was a mixed method phenomenological research study that explored the perceptions and experiences of clinical research participation among KAVI-ICR volunteers. This study contributes to the body of social science research with respect to the potential benefits of applying a mixed method phenomenological research approach together with the social behavioral conceptual framework for HIV vaccine research in understanding the phenomena of clinical research participation among volunteers in low-income settings. Findings from this study show that by applying the two approaches together provides a systematic and structured manner to understanding individuals' subjective experiences; gaining insights into individuals' motivations, actions and the meanings they attach to their experiences and decision-making processes.

The application of the two approaches provided an opportunity for the clinical research participants to share their perceptions and experiences of participation as the researcher delved into understanding their worldviews. In a methodical manner, participants were able provide individual descriptions of their worldviews in what Husserl termed the universe of what is self-evident through experiences as the life-world (Todres & Holloway, 2004) or the lived experience. This kind of understanding therefore provides an opportunity for trial implementers, to see how meanings constructed in specific contexts affect individuals' decisions to participate in clinical research. Stronks et al., (2013), has argued that evidence-based medicine aimed at improving quality of care for all patients, must take into account multiplicity issues in designing clinical studies by applying mixed methodological approaches.

There is growing recognition on the value of integrating social science qualitative and mixed methods research in clinical trials for evidence-based tools for improvement and refinement of research practice (Snowdon, 2015). One of the key considerations in the application of mixed methods phenomenological research is the decision on study orientation that has to do with the weighting of the methodology in use. This study provides contributes to the knowledge on the application of the mixed method phenomenological models in studying the perceptions and experiences of clinical research participation among volunteers. By applying a sequence approach, quantitative data was collected at the initial stage with an aim of orientating the study with a dominant descriptive phenomenological phase as well as helping to identify participants with rich and diverse experiential accounts. The benefits of applying mixed methods approaches in understanding human experiences have been discussed in studies elsewhere (Mayoh et al., 2012).

In this study, findings from the phenomenological phase of the study provided a better sense with how volunteers viewed and experienced different aspects of clinical research participation. One such aspect is that of the informed consent information. From the quantitative survey data, volunteers report high levels of understanding not observed in equal measure in the qualitative component of the study. Camleen and Seleey (2018) on their commentary on lessons learned from applying qualitative research on community experiences in large HIV research trials have singled out the following as benefits- *(1) help reveal contextual factors that influence implementation and outcomes (2). can enable an informed adaptation of trials in the course of conduct, (3). can lead to the formulation of theory regarding the social and behavioral pathways of intervention and (4) enable community engagement in trial design and*

implementation. On the other hand, Mayoh et al., (2012) in their works have argued that use of mixed methods allows for complementarity and a more comprehensive discussion of the study findings.

The social behavioral framework for HIV vaccine research as suggested by Lau et al., (2011) provides a structured way for understanding human experiences and the associated factors to decision making. In this study, an exploration of volunteers' perceptions experiences through various stages of clinical research participation provided an understanding on the connectedness of various aspects of clinical research implementation. In presenting their argument for the social behavioral framework for HIV vaccine research, Lau and colleagues pointed that HIV vaccine clinical research occurs within a context where biomedical science and social issues are inter woven. The framework emphasizes the intersection between broader social and contextual factors with the science driven process experienced by individual trial participants. Findings from this study show that although there is acceptance and forbearance for study procedures and sample collection, as also reported been reported by Omosa-Manyonyi et al., (2014) on mucosal studies, study volunteers have reservations with the collection processes and purpose for which samples are collected. These findings therefore provide a rationale for an inbuilt social behavioural science research in the clinical research implementation process for providing an understanding of the broader and contextual factors affecting clinical research participation.

5.2.1 Individual and community factors

In this section, I discuss the influence of individual and community factors on how volunteers perceive and experience the phenomena of research participation and decision-making. The social behavioral framework suggested by Lau and colleagues (2011), has identified a given number of individual and community factors that shape the experiences and decisions of individuals participating in clinical research.

Individual factors

The individual factors for consideration include place of residence, sex, age, marital status, education, occupation and income. These factors not only dictate the possibility for individuals being available to participate in clinical research studies but also their decision-making patterns regarding participation.

Findings from this study show an association of age and marital status to participation. The highest proportion of participants was of the age category 25-29, with those reporting to be single being majority. The singles under the age of 29 presented the highest proportion of study participants with the numbers declining from age 30 upwards. Disproportionate representation of certain populations in clinical research in many parts of the world is evident. For example, in Kenya, much of HIV transmission is via sex transmission and occurring mostly among married couples (UNAIDS, 2017), yet findings from this study point to the unequal representation of this group in HIV clinical trials. In response to this discrepancy, Stronks et al., (2013) have pointed out that evidence-based medicine aimed at improving quality of care for all patients, must take into account diversity issues in designing clinical studies. On the other hand, Fry et al., (2017), have in their study comparing Sociodemographic and health-related characteristics of UK Biobank participants with those of the general population reported presence of high likelihood of older females and those living in less socio-economically deprived areas than non-participants to participate in bio-banking.

On the other hand, the highest proportion of study participants, among the married was of the age bracket 25-34years as opposed to those of the age bracket 20-24 years. There is likelihood that the older category may already be having children and or on birth plan while the later may be at the point of starting families such that the use of a family planning method to postpone a birth may not be appealing at the time. Although data on parity was not collected quantitatively, qualitative discussions with both men and women from both age groups were indicative that having children was a major booster in deciding on whether to participate or not especially with regard to the use of family planning.

Findings from this study showed that majority of the participants were from the low-income bracket. The finding suggests the high likeliness of low-income earners to participate in clinical research studies as compared to individuals in the middle or upper income brackets. This scenario may partly be explained by the socio-economic standings of the communities they are recruited from and the nature of occupations they are engaged in that enable them to make time for research participation. This finding is reflective of the nature of occupations that many dwellers in Nairobi's informal settlements engage in. Available data from the Kenya Demographic Health Survey (KDHS, 2008-09) for instance shows that only 45% of the women and 38.1% of the men residing in Nairobi are engaged in professional jobs. The proportion of those engaged in manual and domestic among the women were 10.6% and 15%

while among the men they 35.7% and 5.4%. This data implies that more than 50% of the urban dwellers could be engaged in informal kinds of work with some being unemployed.

In the present study, individuals' occupations played a role in shaping their determination towards participation in clinical research. For example, those that were engaged in informal types of work or unemployed were, more likely to participate in clinical research studies than those that were in the formal types of employment. The nature of informal trades included security services such as being guards/watch men, domestic work that includes being house helps, gardeners and petty vendors. Women were predominantly engaged in household work including laundering. A number of men were security guards that worked on night shifts and were as such able to engage in the trials during daytime. These occupations, unlike those in the formal employment, allowed them to negotiate for time to meet trial obligations. Another category of volunteers were unemployed youth that were either out of school or college going, or waiting to join college and as such had free time on their hands to be able participate in the trials. One of the challenges of participation in trials is scheduling and availability of volunteers to meet trial appointments. In documented studies, there is evidence that opportunities and social costs act as barriers to participation in clinical trials, which are time- dependent with long-term follow-ups (Walsh, 2016). Differences in factors affecting men and women's participation are discussed in the Curno et al., (2016), review. Women's barriers to include structural factors such as social-economic status, sex in equalities, low education levels , lack of knowledge about existing studies, societal demands such child care, concerns with pregnancies and use of family planning among others. Dhalla and Poole (2011) to understand barriers to enrolment in HIV vaccine trials, 18 studies, reported personal costs relating to time commitment as an important barrier amongst other barriers.

Findings from this study, showed that majority of the participants (108) had completed secondary school education while those with some primary education and complete were fewer (56). A majority of the respondents had the ability to understand the information provided in the course of the participation given that one of the key requirement for participation was ability to read and write. However, there was also expression of incomplete understanding of certain aspects such as randomization, placebo, false positive, risk and safety. The role literacy skills play in guaranteeing understanding of clinical research information to allow for informed consent is widely documented in literature. Tam et al., (2015) in their systematic analysis of the informed consent, individual characteristics such as age and educational level

were significant in understanding of informed consent information. However, wide spread difficulties in understanding various aspects of clinical research have been reported among the reasonably well educated (Appelbaum et al., 2003). Elsewhere, studies have shown that individuals with low levels of education may have heightened vulnerability of assenting to participation without adequately understanding information (Halpern, 2005 and Berg, 2001).

Although women account for high disease burden globally, they remain overly underrepresented in clinical research with those of minority groups missing out. In a recent FDA global report (2017) on participation in clinical trials 2015-2016, women were 43% with observed variabilities in region, race and type of study. Apart from the USA where the male female ratio was equal, the rest of the world had fewer females than males.

Findings from this study showed significant gender disparities in the enrolment of volunteers into the KAVI-ICR with low representation of the females. This trend is however beginning to change, as observed in the HIVCORE study that reported more females against the males. Various explanations for this asymmetry in participation were evident. One such example is the requirement for women considering participation to be on an effective method of family planning during the study period because of the possible unknown negative effects the trial products may have on unborn fetus.

An important observation here is that, among those that were married, they already had a child or two and were, with the knowledge of their partners they already were on a method of family planning hence had no concerns regarding application of family planning as a requirement for participation in the vaccine trial. For this category of women, this could mean that the fear and burden of having to disclose or consult about participation intentions were minimal. A unique characteristic about these women is that they have been able to overcome the hurdles of decision-making and fertility considerations that affect most low-income women. This pattern is in part, explained by the increasing number of women opting to use methods of contraception in the country. Findings from the Nairobi Cross-Sectional Slums Survey (NCSS, 2012) by APHRC showed a high contraception uptake to 82.1% among females residing in the informal settlements compared to the national uptake 71.1% (KDHS 2008/09). The same APHRC report showed that the contraception among women 21-24 years of age to be 72.4%. Recent finding from KDHS (2014) also put contraception uptake among married women (15-49 years) in Nairobi to be between 61%- 81%.

Findings from this study support the importance of collecting and analyzing individual related data such as social economic status (SES), demographic data in informing future recruitment strategies. A recent FDA Voice report on "*Recent progress on Demographic Information and Clinical Trials"* (Buch, 2015) underscores this need. According to the report this endeavor is not only important for ensuring that all subgroups (sex, age, ethnicity) are well represented but helps to identify barriers to given subgroups' enrolment into trials and helps to inform targeted recruitment strategies.

From the findings, we deduce that characterizing individuals' characteristics is important in informing recruitment and enrolment efforts. Robinson et al., (2016) support this view in their systematic review that although socio-demographic variables may be useful in identifying, which groups are, least likely to participate in clinical research they do not provide insight into the processes and barriers to participation.

Community factors

From this study, community factors such as knowledge and attitudes towards HIV/AIDS, vaccine trials and stigma were found have an influence on individuals' decision making for clinical research participation. Reacting to the question on experience with HIV testing and receiving test results, some volunteers reported that it was not until they joined the KAVI studies that they were able to test for HIV since it was a mandatory eligibility screening requirement. Rumors and misconceptions were prevalent among community members with some having the general view that KAVI dealt in clandestine activities such as those of selling human samples. This finding agrees with past studies conducted in Kenya ((Nyblade et al., 2011) and elsewhere (Sengupta et. al., 2010).

Community narratives, such as those of trial sites selling human samples present major challenges to the implementation of HIV clinical research. In this study, volunteers expressed concerns about the collection of blood and mucosal samples. While this may have a bearing on cultural contexts, they also point to a lack of or limitation of correct and comprehensive knowledge regarding the conduct of clinical trials and requirements and use for human samples. In studies conducted in sub-Saharan Africa (Geissler, 2005, Geissler, 2006, Grietens et al., 2014) communities, have accused medical personnel of blood stealing and causing harm to volunteers among others. In another study conducted in South Africa (Saethre & Stadler, 2013) to examine the responses to the Microbicide Development 301 the trial site found

heightened levels of mistrust for not only the trial practitioners but also study participants. According to the communities, trial staffs were, considered malicious, ill intentioned, and guilt of selling blood and killing participants. Volunteers were termed greedy and virtuous, only joining the trials for personal gains. Although harsh accusations, such as those found in the South African study, did not feature in the current study, there were fears surrounding the collection of human samples such as blood and semen, that they were being sold. The findings affirm the fears that communities that KAVI-ICR engages with have regarding the conduct of clinical trials, suggesting the existence of a gap in vaccine literacy. With this regard, I argue for increased community engagement and vaccine literacy to not only build trust but also improve community knowledge and understanding of vaccines and their developments. There is also need to evaluate popular narratives regarding the collection of human samples in order to inform development of targeted literacy tools.

On the part of information sharing, social networks play an important role in individuals' motivation to share information. This includes how the information provided affects recipients' reactions as well as decision-making processes. In this study, a majority of the study respondents reported learning about the trials taking place at the KAVI-ICR sites from friends some of who were also community mobilizers/ peer educators. These were people, from their communities and were as such well acquainted. A number of these introducers were also said to have either been participating or had participated in past studies; implying that they had first-hand information and experience about the trials. In addition, given their commonality in place of residence, they could easily be trusted with the information they shared. They could also attest to the benefits of participating and thus help reduce some of the fears concerning safety. The role of peer influence on participants' decision to participate in trials is reported in the Manton et al., (2019) study conducted in the Australian State of Queensland where peers were reported to provide approval for participation as mothers disapproved.

Tied to having received information about the KAVI studies from peers, was the sense of confidence among some of the volunteers to the extent of feeling equipped to talk about the trials to members of the community. The finding therefore, suggests that the type of information about the trials and the person who shares it at the first instance are very important in creating an environment that is less threatening to a potential participant. The openness of the person conveying/ who introduces peers to the study has huge potential for determining if one is likely to enrol and complete participation in the study or not. The important role played by

social networks in relaying clinical research information is contained in studies elsewhere. A decision making report by CISCRP (2015) revealed that, a significantly higher proportion of respondents from South America had received clinical research information from family and friends (29%). Besides being introducers, friends/ peers also played the role of affirming to individuals about their safety. For a number of volunteers, knowing persons that had participated in past trials without having or showing ill effects had helped to lessen some of the fears held following misinformation and rumors that may have been trending in the community.

The potential influence of recruitment channels and sources of information about studies on willingness to participate (WTP) has attracted attention in other studies. A study by Frew et al., (2013) evaluating factors associated with diverse participants' enrolment into a Yellow Fever Vaccine (YFV) clinical trial, found that those that were recruited through direct channels such as health fairs, community events, referrals and person to person contacts, were more likely to enroll into the study. Findings from this study submit that recruitment through direct techniques might lead to increased trust among potential participants, as opposed to indirect strategies such as posters.

5.2.2 The Clinical Research Environment

In this section, I discuss the influence of the clinical research environment in shaping individuals' perceptions and experiences of clinical research participation as well as decision-making. According to Lau et al., (2012), factors to consider here, include study requirements, recruitment and screening, informed consent, retention/attrition, social harms, sexual risk monitoring, cultural competence of the investigators and clinical site staff. Drawing from the study's operational framework, a number of factors stood out through the different levels of trial participation that influenced how individuals perceived, experienced and made decisions regarding participation. In this respect, the discussion in this section looks at the enablers and barriers through all levels of participation.

Recruitment

Findings from this study show the important role played by peers/friends in introducing volunteers to the KAVI-ICR studies. Of interest, is the information received regarding the studies and it shaped individuals decision-making patterns. For many of the volunteers, besides the information that KAVI was looking for volunteers, they were also to learn of benefits of

participation that included free health check-ups and monetary gain. From the qualitative interviews, for some of volunteers the decision to participate was upon learning about the studies. Incidences of potential participants taking decisions to participate in clinical trials before informed consent are common. For instance, Pare et al., (2013), in a study conducted in Burkina Faso, over 70% parents had their decision to participate made in the community before taking the informed consent. These decisions, for some were resultant of possible of access to free and good quality of health care.

Besides the information received from the introducers, the information provided at the community seminars and at KAVI had played an important role in shaping the decisions made by the volunteers. The information received according to the volunteers, ranged from what KAVI-ICR was and its mandate, general HIV and AIDS information as relates to transmission, testing, prevention and treatment; history on the development of drugs and vaccines and broadly on the intended studies being recruited for. Study specific information included what the study was about, objectives, types of participants required, eligibility criteria, required samples; potential risks and benefits of participation and the fact that their participation could be voluntary. For others the consenting process a guarantee of their safety, in spite of prior decision-making

From across the six studies, majority of the study participants found the information provided at the recruitment seminars to be new but also informative and educative. The desire for more HIV and AIDS related information was for instance, said to be a motivation to attending subsequent recruitment information seminars. These findings point to an impending gap on knowledge attitudes and practice (KAP) relating to HIV prevention as well fears surrounding HIV counseling and testing. This gap was, evidenced by volunteers' reports of having not tested for HIV prior to recruitment into the KAVI-ICR studies. Available data from the Kenya Demographic Health Surveys (KDHS- 2003, 2008/09 and 2014) reveal that although Kenya has witnessed an increase in the number of persons (15-49 years) testing for HIV, there is still a high, unmet need for HIV testing and counseling. In 2014, about 53% of the women had an HIV test having risen from 29% and 7% for the years 2008/09 and 2003 respectively. Among the men it was 46% having increased from 23% (2008/09) and 8% (2003).

Findings from this study revealed that more men than women reported having tested for HIV for the first time as opposed to the women, perhaps because women get to test for HIV as part

of their routine antenatal care when pregnant. Following the HIV information provided and the requirement by the study for individuals to maintain HIV negative status during the duration of participation, a number of volunteers reported adopting safe sexual behaviors such as partner reduction and use of condoms or abstinence for some. The importance of HIV information in infection transmission reduction has featured in a number of studies elsewhere. For instance, the Nairobi Cross-Sectional Slums Survey (NCSS, 2012) by APHRC asked young people if their knowledge about HIV and AIDS had influenced their behaviors. Over 70% of the males between 21-24 years initially reporting multiple partner relationships, reported adopting consistency condom use. About 33% indicated partner reduction. Among the females of the same age category, 33.5% reported adoption of condom use while 31.3% reported partner reduction. Findings from this study, indicate that receiving a negative HIV test result during screening, coupled with information had resulted to a number of volunteers making deliberate decisions to change their sexual behaviors in order to continue participation and remain HIV free.

With the number of efforts already in place to increase access to HIV information, counselling and testing, one may perhaps assume that communities are well informed about HIV, its transmission modes, prevention and the need to test. The fact that the population reached for this study, were urban based, the assumption is that they not only have access to HIV information but also testing services yet this is not the case. The findings from this study therefore imply great need for targeted HIV information delivery, HIV counseling and testing among communities living in the urban informal settlements more specifically the males.

Informed consent and Understanding of trial related information

Findings from this study show that volunteers were consented before joining their respective studies. This was evident by the information they received stating the goals of the studies, the risks, benefits and voluntarism and their passing the assessment of understanding test. Although volunteers reported high levels of understanding of the information provided as certified by passing the assessment of understanding (AOU) the informed consent, this did not translate to actual or complete understanding. Similarly, findings from this study using the quantitative tool revealed that volunteers had high levels of understanding of the information provided through the informed consent. These results were however not consistent with those arising from the follow-up in depth interviews where a section of volunteers indicated a lack of understanding of certain aspects of the studies they had enrolled. The apparent discrepancy

between the results of the in-depth interviews and those of the assessment of point to the inadequacy of the assessment tools in measuring individuals' understanding of information provided prior to enrolment and obtaining true informed consent. This finding is consistent with studies by Cook-Gotay (1991) and Ford et al., (2008) that report incomplete understanding of the various aspects of clinical research participation among study volunteers.

Further, although there was incomplete understanding this did result to decline in joining the studies suggesting existence of other reasons for joining the studies. Recent studies in Kenya have also presented similar results (Vreeman, et al., 2013 & Naanyu, et al., 2014) who though participants had incomplete understanding they were motivated to participate for health benefits. In other studies, there have contrary views, as low levels of understanding have been associated to reluctance of patients to join studies following randomization (Woollen, 2011). Findings from these studies and the present study raise the question on what does constitute understanding to warrant voluntarism for participation in HIV clinical research. Although, all volunteers in this study were consented prior to enrolment into the studies upon having passed the aggregate mark for enrolment, a number of them reported incomplete understanding of aspects such as risk, randomization and placebo, false positives. From a methodological point, the findings underscore the value for applying mixed methods approaches in evaluating individuals' levels of understanding.

Findings from this study, revealed that in spite of volunteers having been told that the trial products could not protect from acquiring /being infected with HIV, there were some that believed that the products on trial could offer some form of protection. This misconception was further qualified with some of these participants showing randomization preferences. Therapeutic misconceptions, of the trial products among populations, are the driving force behind some individuals participating in clinical research (Sloma, 2008). This general attitude has been described by some writers (Lidz et al., 2004) as a *failure by study participants to appreciate that elements of research design such as use of placebo and randomization may limit the degree of individualized care*". Similar views are found in Dubé, et al., (2017) study where perceived clinical benefits or social benefits appeared to be important motivators to participation. Participants expressed hopes of preserving the systems' ability to fight HIV, reduce risk of transmitting HIV to sexual partners, control viral load in the absence of treatment among others. Findings from these studies suggest that beyond voluntarism and altruism, individuals more so those with a history of risky sexual behavior may join clinical trials

with a hope of getting some level of protection from acquiring HIV from the trial product. In this respect, trials should put in place strategies for post trials HIV risk reduction counseling among previous study participants and the community at large.

Decision making to participate

Decision-making is pertinent at all levels of clinical research participation and this range from the decision to attend recruitment seminars, enrollment, and retention in the study. Findings from this study, showed that individuals' decision making processes were shaped by a number of factors that included social inequalities (such as gender, age, social economic status) information provided, interpersonal/trust relationships, risk perception, perceived and actual benefits. In addition, volunteers exhibited varied decision-making patterns that included consultations, non-consultations and individualized decision-making. For example, in general, volunteers in vaccine-based studies seemed to consult more as opposed to those in the Protocol J observation study. This is evident in table 5.21 on page 80 in the results section. This observation is due to the differences in their requirements and risks involved. Whereas in the B002, B003, HIVCORE, S001 and PrEP had an investigational product, the Protocol J was an observation study where participants were required to maintain their sero-negative status for those not infected. The need for consultation is even more evident with regard to marital status where participants tended to consult with their partners more, followed by friends as opposed to parents, siblings and healthcare workers. The decision-making patterns in this study are reflective of findings reported in a study on Gender and social barriers to clinical research participation in Kenya (Nyblade et al., 2011) the importance of partners and significant others with regard to consultation has been observed. Lubato (2014) has also reported similar findings where decision- making by females was more likely to be influenced by friends, family, or researchers. These views are similar to those from a study evaluating the role of the community in influencing the decisions of the youth to participate in HIV vaccine trial in Tanzania (Mbunda et al., 2016).

Findings from this study reveal several reasons why some volunteers did not consult and even disclose their participation. For some it was the fear of antagonizing stability of relationships, the need to protect significant others from fears and anxiety of unknown risks that they themselves did not seem to understand very well even though they were participating in the clinical trials anyway. The assumption is that the significant others may not be able to cope with realities of participating in clinical research. The other element for non- consultation was fear

of being misunderstood about motivations for participation and in some instances being assumed to be HIV- positive. This was, clearly brought out in the discussion with participants in PrEP who preferred to participate discretely for the fear of stigma and being mistaken to be HIV positive. This attitude towards participation in clinical trials and the fear of false labeling has been reported in other studies (Nyblade et al., 2011). There are those participants who did not consult for fear of dissuasion from their course and exercised personal responsibility based on their beliefs and individual motivations. Similarly, Walak et al., (2011), found non –disclosure of participation to be associated with fear of being thought to be HIV positive.

Findings from this study show that the extent to which individuals were able to make informed decisions based on the information provided by the trial staff varied. From the study findings, it is evident that for some participants the decision to participate was reached long before making contacts with the KAVI staff. This general behavior for many was a result of the presumed benefits of participation as had been told by the contacts persons to the study. A specific case is that of a PrEP volunteer who joined the study for perceived financial benefits. To this specific volunteer was the confession of not having fully understood the trial information but went ahead to sign the informed consent. By ethical standards, individuals' decision-making is supposed to be informed by their clear and complete understanding of trial information detailing trial requirements, obligations, risks and benefits prior to joining the trial.

Also trending as a key motivator for many of the volunteers was the free medical care. These findings suggest that although informed consent may seem to have been achieved from clinical team's perspectives more so through assessment of understanding, this may not reflective of all volunteers. As alluded to, in the earlier section of this discussion, for some volunteers' social economic status had an influence on their decision making in what is termed as undue inducement (Emanuel et al., 2005). Important arguments postulated are on the ethical inadequacies of obtaining true informed consent among the low-income populations (Denny & Grady, 2006).

Trust Building and decision-making

An important element within the decision making process is trust, especially where individuals and community have to consider risks and benefits. For some volunteers in the present study, trust was important in motivating them to participate in clinical trials. Volunteers

talked of the relationships they had built with the trial staff through the various stages of trial participation. This trust, for many was emanating from their levels of professionalism, openness of the trial staff. The findings from this study agrees with works done by Nabulsi, et al., (2011) and Peek, et al., (2013) that found trust to be important in enhancing individuals' decision making as well as uptake of treatment options. Smirnoff, et al., (2018) in their survey to capture attitudes towards research and level of trust or mistrust in medical research reported that although there was 85.3% positive attitude towards research, many of the respondents had general mistrust for research. The survey further yielded four trust/ mistrust domains with demographic differentials. They included general trustworthiness expressed by older non-disabled persons; perceptions of discrimination expressed by African American, Latino, Spanish language preference; perceptions of deception based on prior research experience and among African American); and perceptions of exploitation from those with low levels of education.

Although this study did not have a question asking participants about their levels of trust in the clinical study physicians and staff including their significant others regarding their decision-making, trust stands out as one of the key elements of decision-making. Through various stages of participation, volunteers weighed their decisions as they consulted with friends and trial staff for reassurance. MacArthur (2017), in a her study evaluating the HPV Vaccine Decision Making Process, has argued that individuals use trust as a resource to increase their chances believing the risk messages coming from expert systems, and subsequently increasing their likelihood of clinical research participation. Similarly, from this study some volunteers were of the idea that the "*doctors know"* it is safe.

Findings from this study further revealed that in spite of the perceived and actual risks of participation, volunteers tended to draw on trust such as *knowing others that had participated in past trials and were still okay* or *trust on the staff trial motivations - they would not be trying it if it was not safe.* In this study, trust acted as a key ingredient in building trial staff – volunteers' interpersonal relationships. Volunteers described trial staff as not only being knowledgeable and professional but also open, caring and sensitive; attributes that had led them take a position of trust even in the midst of fear of the unknown. Clinical trial staffs play an important role in influencing individuals' decisions to participate in HIV/AIDS clinical trials as has been reported in a number of studies. The role of trust in influencing individuals' decisions to participate is reported in a number of studies. Byrne et al., (2014) in a study

to determine factors are associated with patients' participation or willingness to participate in cancer trials, reported mistrust and lack of knowledge on clinical trials as key barriers to participation. The study recommended improved understanding of cultural differences and sensitivity by physicians as potential for restoring trials confidence.

Risk and decision-making

Findings from this study showed that in spite of the motivations to participate that ranged from potential and known benefits such as free medical care, monetary gain, HIV information and altruistic reasons they had also considered the risks. Costas et al., (2012) and Wult et al., (2016) have reported similar findings. Sharing similar views is Manton et al., (2018) following a qualitative study that investigated the underlying motivations by healthy volunteers into participating in phase I trials. Although the volunteers in that study had been motivated by monetary gain, altruistic reasons and health benefits, their decisions were considered to be based on risk.

Differences in understanding and perceptions of risk are evident in a number of studies. Findings from this study showed that although participants had fear at joining the studies, these fears seemed to wane with time, following the information provided and actual experiences. Participants that knew of people that had participated in past studies had few expressions of fear of risk. There were few reports of bodily changes reported such as headaches that were termed as expected. Henon et al., (2017) in a study evaluating reported tolerability to adverse effects involving 27 phase I cancer trials drawn from diverse settings in the period 2014 and 2015, reported patients to experience fears of adverse events at two levels- before commencing the trials post trials completion. Fears expressed prior to commencing trials: adverse events of pre – trial most feared were of hematuria, vomiting, and hyperglycemia, while those of post-trial participation, initial fears persisted in addition to fears of personality change, fever, and dizziness. This study showed variability of fears of adverse events between trial physicians and the participants with latter fearing for eventual eye disorders, confusion and blurred vision.

Similarly, fears of potentials negative events following trial completion were reported albeit the trials staff's efforts to provide all possible relevant information and assurance of their being minimal risks. Among the participants, projecting heightened fears were those with high literacy levels. This could be perhaps because of how much they were able to understand the

protocols. For example, participants from the KNH trial site who were college graduates expressed concerns about the safety of the trial products. Even though participants from the Kangemi trial site expressed fears and concerns, they were not elevated as those of their counterparts from the KAVI-KNH trial site. This could perhaps, be due to the fact that participants from Kangemi had lower educational levels and would therefore be least concerned with analyzing and questioning levels of risk pertaining to study products. A key example is a female university student who felt cheated when asked not go and test elsewhere as tests could most likely turn out positive. A study conducted in Ivory Coast analyzing risk pertaining to influenza found that women with less education had a higher vaccine uptake as opposed to the women with high education (Lohiniva, et al., 2014).

Understanding the information provided did not help individuals provide informed consent but had resulted to randomization preferences. For some, the high levels of understanding meant they had better understanding of the potential risks and burdens of participation. This knowledge for some had resulted to randomization preferences. Those with heightened fears about the potential risks wished for the placebo arm. The fear of adverse effects as deterrent to clinical research participation is well documented (Nabulsi, et al., 2011). On the other hand, those with the notion that the trial might offer them some level of protection seemed to wish to for the study product arm, referring to the placebo as just water.

Finding from this study revealed that certain study requirements such as delaying/ postponing fertility intentions by using a method of family planning during the course of trial participation come with risks on the part of the users. These risks are both of social and reproductive health nature. Tied to risks of participation among the women, is the requirement for use of a family planning method. Because of the un- known risks, the products of trial may pose to an unborn child; both men and women were required to adopt a reliable method of family planning to help them delay the occurrence of a pregnancy during the course of research participation. The study furthers showed that women that had never used a method of contraception or had had negative previous experiences with using a method of contraception had reservations towards trial participation. The use of a method for women that were in permanent sexual relationships could mean partner consultation, resulting to disclosure of participation intentions. The fears surrounding the use of family planning methods is not new among many women in many parts of the world where use of family planning has been associated with o infertility (Alai & Nanda, 2012).

In this study, the gender dimension in risk perception lingered, with women presenting more fears around the use of a method of family planning as compared to the males. This perception was as result of the information regarding the uncertainty about what could become of an unborn child if it were to come into contact, with the trial product. The fear of potentials risks appeared to be a major hindrance to women participating in clinical trials especially with the information that the effect of the drug to the unborn child was unknown. Providing clear and concise information about a given trial is ethically imperative and potential benefits for those choose to participate. According Edwards et al., (1998), high level of knowledge, have potential to reduce participation anxiety about various processes and aspects of research participation. They argue that the more patients know are informed before recruitment to participate in a trial, the better equipped they are to cope with the informed consent procedure.

A few men who had declined to participate equally shared the fears about possible risks. To these participants, their fears were emanating from their significant others expressing concerns about the possible negative effect on their fertility. This finding well suggests that where there is no couple communication as relates to fertility or the lack of understanding of one partner on trial participation and extent of risks will always be a major deterrent to women's participation in clinical research. Kabagenyi et al., (2014) in a study conducted in Uganda on male involvement in contraceptive uptake, found that although the men had high knowledge of the effectiveness of family planning methods, they held fears about side effects. The female contraceptive methods were thought to disrupt sexual activity and lead to extramarital sexual relations among others. Similar findings have been alluded to, in a study on *Gender and Social Barriers to vaccine trials participation conducted among KAVI volunteers (Nyblade et al., 2011)* where women had concerns about delaying fertility and fears relating to negotiating method use with their partners.

Findings from this study indicate varied perceptions on risk with some volunteers citing greater risks, some minimal and for others there being none. This variance for many had to do with study type, study arm after randomization; requirements/ procedures such as samples to be collected and frequency; across genders and age. Varied decision-making processes and outcomes were also evident. For example, volunteers in vaccine-based trials seemed to express more fears and concerns about their safety as opposed to those in the PrEP drug and Protocol J observation studies. From the information they had received they were more aware of the possible risks of participation. The requirement for study participants to postpone fer-

tility intention during the study period due to unknown risks of the drug to the unborn babies in case of pregnancy had heightened their fears with regard to the trial product. The idea that, there were minimal risks related to participation did not help to reduce the fears for many participants and seemed to portray contradictory logic. The fact that even the researchers were uncertain about certain outcomes thus implying '*unknown grey area*' was unsettling. On the one hand, there is *assurance of there being minimal risks and on the other requirement to delay fertility intentions for unknown risk to unborn child thus* displaying uncertainty.

Additional worries were about the longevity of the trial products in the system KAVI instructs participants not to take an HIV test in any other health facility on the basis that, having the product could show a false positive HIV result owing to the testing technology that might be below what is at KAVI-ICR. The information about false positive HIV test results was not convincing to some participants and actually raised concerns about the trial product. Therefore, being cautioned against taking HIV tests in locations (VCT) other than KAVI-ICR was a source of concern and suspicion creating the feeling that there might be something KAVI-ICR was hiding and the notion of perhaps, having been injected with the HIV virus. Indeed, there were some volunteers, who defied this instruction from KAVI and went ahead to test in other VCT centres to confirm their status. Clearly, there were fears surrounding the information provided about the unknown risks of the trial products. This issue required a more concerted effort in communication to ensure participants understood and were convinced of the need to restrict test to KAVI trial sites. The issue of communication and in particular risk communication has been identified as critical in behavior change and adherence (Jardin 2008, Larson et al., 2014, Salmon et al., 2015).

Experiences with samples collection

In spite of collection of human biological samples increasingly gaining importance in the field of clinical research, this endeavor remains contentious in many communities of the sub-Saharan Africa region. This study focused on six KAVI-ICR studies with varying sample requirements. Findings from this study reflect on participants mixed reactions towards sample collection. These varied with types of samples collected, modes of collection, sites where they are collected from, frequency and amounts collected. There were varying acceptance and tolerance levels shown for blood samples as compared to mucosal samples. Some volunteers had questions regarding the rationale for the collection of rectal and seminal samples. On the other hand, non-invasive samples such as urine and saliva did not attract concerns though

mentions of sensitivity with nasal sampling existed.

Fear of Needles and collection of blood samples

Similarly, findings from this study showed that experiences of pain and fear were common among volunteers. These fears, for some emanated from seeing a needle, thought of being injected and actual experience of pain on being pricked. Study participants reported cases of intense pain resulting from needle prick more so in instances where a vein was missing and required several pricks. Fear of needles commonly known as blood - injection- injury phobia (BII) remains a barrier to accessing medical care. Although injections play a significant function in the delivery of treatments, and an estimated 12 billion injections and 100milion childhood vaccinations are annually administered globally, (WHO 2000), available literature has shown that fear of needle pain hinders individuals from adhering to treatment or avoiding it all together (Wright Simone et al., 2009). A study evaluating fear of needles, nature and prevalence in general practice (Wright et al. 2009) showed a high prevalence of needle fear of 22% in an outer suburban practice. In the same study over 60% physical symptoms and over 20% had fainted in response to needles were reported. A recent review by McLenon et al., (2019) reported majority of children to exhibit needle fear. Fear for needles among adolescents ranged from 20-50% and a range of 20–30% in young adults. Although needle fear decreased with age, females had elevated fears compared to the males. Avoidance of influenza vaccination for fear of needle occurred in 16% of adult patients, 27% of hospital employees, 18% of workers at long-term care facilities, and 8% of healthcare workers at hospitals.

In spite of the reported cases of fear and pain from needles, there were reported cases of volunteers overcoming fears as well as developing coping mechanisms. This included closing of eyes and applying muscle tension technique. Muscle tension technique involves tensing muscles in the body, which then raises blood pressure hence reducing likely faintness. Studies evaluating coping and response mechanisms to injection pain have shown success in the use of muscle tension technique in reducing tension among patients and enhancing their willingness to seeking medical care (Chapman et al., 2013, Pitkin et al., 2014). The extent to which individuals are able to cope with pain is associated with optimism. In this study, the knowledge of why the blood wad collected was a consolation for withstanding the pain. This finding has been supported by works elsewhere (Goodin et al., 2013), that have suggested that persons with high levels of optimism may be more likely to report greater hopefulness and pain acceptance which in this case could be a good pointer to clinical trials retention.

An important aspect also emerging from this study is the importance of preparing volunteers for what to expect at every stage of participation as this has the potential of minimizing anxiety and expectations. A number of volunteers in this study reported knowledge of the various procedures they were to undergo and were therefore, not caught by surprise. This finding agrees with that from a study by Edwards et al., (1998) where volunteers with high levels of knowledge had reduced participation anxiety.

Although the collection of blood samples to run medical tests is not a new phenomenon, findings from this study showed that even though volunteers agreed to give their blood for clinical tests, there were concerns held by some regarding the amounts of blood drawn at any given time. These concerns had led to some holding the view that perhaps their blood was for sale. This narrative according to the volunteers was rife among community members who questioned the rationale for reimbursing trial participants if they were indeed volunteering. Concerns and accusations against researchers selling blood and reaping from unsuspecting volunteers are not new in a number of trial settings, where. Studies conducted among Kenyan populations, have also highlighted these suspicions surrounding human samples. An earlier study by Nyblade and collegues (2011), examining the gender and social barriers to participation in HIV Vaccine trials in Kenya showed that community members and trial participants had concerns about the drawing of blood and the amounts thereof. The view as expressed by participants and community members was that trial staffs were collecting the blood for sell or for ritual purposes.

In one study conducted in southern Africa examining responses to the microbicide development programme 301- a randomized double blind, placebo controlled microbicide trial (Saethre & Stadler, 2013), community members' attitude towards trial staff are evident as they refer to them as "*malicious whites*" and accuse them of selling human blood while infecting study participants. These thoughts are particularly predominant where community members live in abject poverty and individuals may not have much control over their decisions as the benefits may outweigh the potential risks.

Although the collection of blood is not new in the medical care and treatment, volunteers from across the six studies expressed concerns with the amounts of blood collected and the reasons for which it was collected. The concerns regarding the amounts of blood in this study and other studies point to important questions as regards to how much information is provided to the participants with regards to the various tests for which blood is collected and the

extent to which people actually understand. Chatio et al., (2016), have reported similar fears and concerns in study, evaluating parents' knowledge and perceptions about clinical trials and the use of biomedical samples in Ghana, where parents were agreeable to the collection of samples, although they were apprehensive about blood samples fearing that researchers sold the blood samples. This study suggests need to build people's knowledge around the rationality for banking blood in clinical research similar to those of blood donation campaigns.

Findings from this study showed that volunteers still hold concerns with collection of blood, reflecting the unmet need among community members for clinical trial information and the use of human samples. With KAVI-ICR having been in existence for close to two decades now, there is need for greater understanding of the deep-rooted tensions in communities concerning medical research. Borrowing from the works of Enria et al., (2016), social science research is important to helping unpack notions of power, fairness and trust in the contexts of the researched communities hence reducing the tensions.

Mucosal sampling

Findings from this study showed that even though providing mucosal samples was an option, it served as a good reason for some volunteers to decline enrolment. Participants from this study exhibited diverse perceptions and experiences with mucosal sample collection. These views and experiences varied with type of sample collected and sites of collection. Although the samples collected included saliva, nasal secretions, the collection of sample from the genitalia attracted more concerns and reservations more so from the male volunteers compared to the females. While the concerns among the females was the discomfort experienced with the insertion of the soft cup into the cervical area and use of cyto- brush; for men it was a requirement for them to undergo masturbation in order to release semen. For, some this was not well received and resulted into decline enrolment altogether.

A number of male volunteers reported having agreed to the collection of all other samples except the semen and rectal samples. For a number of men, the act of masturbation was not only un-cultural and invasive but also contravening religious practice and morality. These findings are similar to those from recent studies conducted in Kenya and South Africa (Omosa-Manyonyi et al., 2014, Lazarus, 2014). For these men, although the researchers may have explained the requirements for the study, the actual experience with sample collection was far from their expectations. In the Kenyan study for example, a tolerability questionnaire administered to 87 of the 105 volunteers at the sub final visit to evaluate their acceptability and fea-

sibility of repeated mucosal sampling reported varying tolerance levels. Close to half (48 %) of the men agreed to give semen at all visits, while about half of the women (52%) gave cervico-vaginal samples at all visits. Only a quarter of the volunteers agreed rectal sampling.

Findings from this study further showed, that although some participants had shown acceptance for semen collection, the question about "*why"* it was required lingered on in the minds of many potential research participants and community members. These questions according to the volunteers had led to many fearing and even believing that KAVI was collecting semen for sell. The existence of this narrative could well suggest that communities need to be more engaged in discussions about their perception of human samples and their use in clinical trials. Similar findings have been reported by Brintnall-Karabelas et al., (2011) where 36% (n=345) individuals declined enrolment for protocol specific issue while 33%, N = 323) were as result of inconvenience. They indicated willingness to participate in future studies if these are less intrusive or time-consuming procedures.

While there was reported widespread, discomfort about giving blood, the situation was graver with the quest for samples rarely collected such as semen, thus showing community's limited understanding of the goals for clinical research. This finding gives an indication of the potentials impact of persistent misinformation and misunderstandings on future participation. This therefore, calls for clear strategies for packaging and delivering clinical research education and preparation of participants. These goals, according to Sacristán et al., (2016), can be realized through normalizing the society's image of research and creating "expert volunteers". Essentially, people need understanding on the value of research and the roles volunteers in the success of this endeavor. Creating expert volunteers could require developing communication strategies so that a wide spectrum of community members are better informed about the goals of clinical research in order to avert any unforeseeable myths and misconceptions.

5.2.3 Macro Environmental factors

The Lau et al., framework (2011) suggests a number of factors for consideration under the macro environment. These include the power dynamics, societal fabric, economy, politics, health policy, research capacity and culture. In this section of the study, I discuss the role of the economy and health policy as relates to individual perceptions, experiences and decision making for clinical research participation.

Data on volunteers' characteristics by place of residence showed that a majority were from the Nairobi informal settlements of Kawangware, Kangemi, Kinoo, Kariobangi, Kibera, and Mathare. Majority of the residents from the settlements are either unemployed or engaged in informal types of work with meager earnings and therefore live on less than a dollar day. Characteristic of the settlements is poor housing, lack of clean water but also limited quality of health care. In terms of health care, they are served by the County health centers, which are not only understaffed and limited in advanced diagnostic tools and medicines. As an underserved population, it would seem that the attraction of free medical and quality services that go with participation in the project would serve as a strong motivator and overriding factor in decision-making around participation in the project even where there are also doubts and fears about participation. Owing to the levels of unemployment, limited incomes, as demonstrated in table 5.11 a majority of the participants earned a monthly income of between Kshs 5,000-10,000 (equivalent of USD 50-100). Therefore, for most of them the transport reimbursement could qualify as a source of income, particularly when the visits were for several days in a month. This finding on social inequalities is evident in the Nairobi population resulting from rapid urbanization and population explosion. Kenya's census data shows that Nairobi's population has increased from 350,000 in 1962 to 3,375,000 people in 2009(KNBS, 2009). Being the capital and largest city, Nairobi has continued to attract populations from both the rural and other urban centres in search for better opportunities. This has resulted into rapid and uncontrolled population explosion with creation and expansion settlements that are a home to more than 70% of Nairobi's urban population.

Findings from this study indicate that the trial sites provide health screening and treatment for volunteers in the event of illness during the study period as part of routine medical care. These services were received with utmost appreciation and hence a motivation for retention. From this finding we deduce, that although people are expected to make rational choices based on their individual circumstances as well as household needs, there are other competing factors that influence their experiences, perception and decision-making in clinical trials. These include risks and potential benefits among others. Health inequity in many developing countries deprives many poor people quality and affordable health care hence increasing the disease burden on individuals and households. In spite of attempts by the Kenya Government to avail free medical care to its citizens through public health facilities, many of these facilities have a number of challenges that include poor staffing, diagnostic tools, drugs and space among others. This scenario forces many people to seek health care in private health facili-

ties, which are often costly, hence putting a lot of burden on the limited household resources. As such, the special attention and privileges that come with research offer an avenue for gain to study participants. This was evident at the KAVI trial sites (KAVI-KNH and KAVI- Kangemi) where operations clearly stand out in their excellent service delivery.

Payne et al., (2017) in a study assessing risk in relation to economic inequality reported a likeliness of inequality promoting a range of poor outcomes that could lead to increased risky behaviour. A study by Crystal et al., (2008) evaluating the factors associated with enrolment of African American into clinical trials found that enrolment was associated with societal health benefits. In this study, health related costs had a predominant influence to participation. Similarly, a study conducted in Malawi (Mfutso-Bengo et al., 2008) also found that a majority of the respondents joined clinical trials in order to access health care offered in government health facilities which were said to be ordinarily not only overcrowded but also lacked drugs. In a recent study by Grady et al., (2017) on motivations, enrolment decisions and socio-demographic characteristics of healthy volunteers in phase I trial, risk was an important factor for enrolment decision although financial gain was a primary reason. Overall findings revealed significant social inequality among the participants with low incomes, disproportionate unemployment status.

This study examined the perceptions and experiences of participation through various stages of clinical research implication. Findings from this study show that beyond understanding the goals of the research studies, participants weighed their risks and benefits of participation. As such social equalities such as those of access to health care, employment and low incomes are important factors that may influence individuals from poor environments to join clinical trials as a response to benefits gained in the process.

CHAPTER SIX
CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

In this chapter, I examine the extent to which the research questions and objectives to this study were achieved. Further, I outline some of the proposed recommendations and possible areas for future research. This study was guided by the following objectives: to *describe the characteristics of individuals who participate in clinical research; examine individuals' perceptions towards clinical research participation; document volunteers' experiences at various stages of trial participation and their potential impact on decision making to participate; identify factors that enhance and /or constrain clinical research participation experience and explore similarities and differences of participation experiences among volunteers in the various KAVI-ICR studies.*

From the findings, a number of conclusions based on the discussion and study objectives are drawn. Collecting and analysing data related to volunteers' characteristics is important in determining the subgroups that are likely to participate in clinical trials and those that are not. This kind of information is not only important for gaining understanding on the recruitment disparities but also understanding the unique challenges that may hinder participation of given populations in clinical trials. Trial demands such as the requirement for female volunteers to delay fertility intentions by use of a reliable method of family planning hinder potential women volunteers from participating in clinical trials. Individual related data such as social-demographic and behavioural is important in mapping interventions and informing recruitment strategies.

Information plays a very important role in not only shaping individuals' decisions to participate in clinical research but also their overall behaviours. Within the context of clinical research trials implementation, information plays a number of key roles such as creating awareness of upcoming studies, keeping communities informed about various developments that have happened as well as helping to diminish rumours and misconceptions about trials based on misinformation. Individuals that have correct information have a likelihood of participating in clinical trials in that besides other motivations, their decisions are informed based on available information.

From the findings, there appears to be a methodological gap in assessing understanding of the

informed consent. While the quantitative data gives the aggregates and therefore meeting trial requirements, the qualitative approach gives the human element of research therefore giving credence to the social science approach understanding human behaviour. The use of qualitative approaches has proved invaluable in assessing individuals' levels of understanding of trial information pertaining to the informed consent.

Understanding factors that motivate individuals to participate through the various stages of clinical participation is important for effective implementation of clinical studies and improving individuals' decision-making and overall participation experience. Routine health monitoring and transport reimbursements were for instance found to motivate individuals to participate in trials and it is not clear whether they would have participated if the token was not available. From the findings, it is evident that key features of participation in clinical trials revolve around the expectations of each of the studies and the experiences that are generated.

Social networks play a very important role in the recruitment process of volunteers into studies. Investing in past volunteers by way of providing them with continuous updates on trials has a potential for increased trial uptake among members of the community. In spite of there being various modes of communication, information dissemination by word of mouth remains common among communities. People are more likely to trust information from sources they know. Additionally, investing in community vaccine literacy has potential for increased acceptability for vaccine trials.

Risk communication is an important element in HIV Vaccine trials and should be continuous. How individuals perceive risk is a key factor in determining whether they participate in a given study and whether this participation would be to the end. An analysis of risk perception among the population is important for developing and designing targeted risk communication packages. Although findings from this study about risk perception are not conclusive, they point to the need for refined tools for evaluating potential volunteers' understandings and further investigations into risk perception among low-income populations. Paying attention to the views of participants may enhance the accuracy of risk assessment in various sub categories of population to enhance their participation in clinical trials.

Trust is a key resource for individuals determining to join clinical trials that come with uncertain risks. In this study trust relations were not only shaped by peer contacts and their experiences but also the trial staff cultural competence, levels of engagements, information

provided over course the of time, mode of delivery and packaging. Trust gives individuals the capacity for autonomous decision-making and opportunities for shared decision-making and or negotiated decision-making. While this may seem positive, it may also have negative implications when it comes to power relations thus affecting informed decision-making.

From this study, we conclude that beyond willingness to participate, understanding and consenting, there are a host of factors that shape volunteers' perceptions and experiences of participation in clinical research including decision-making. Some of these include information, understanding trial requirements, perception of risk and trust relations, social, health inequalities, and participation benefits. Health inequalities resulting from social and economic exclusion may affect individual's perceptions, experiences and decision making with regard to clinical research participation. Finally, how individuals perceive and experience the phenomena of clinical research participation has the potential for informing the extent to which ethical obligations are met in a research setting.

6.2 Recommendations

This study recommends that study trials should therefore invest in developing a tool that continually captures volunteers' perceptions and experience with data collection.

1. There is need for greater understanding of the deep-rooted tensions in communities about medical research. As such increased social science research and continuous community engagements should take place to help unpack notions of power, gender, fairness and trust in the contexts of the researched communities.
2. In order to address volunteers' fears and concerns regarding participation, assessment of understanding should be a continuous process through the life course of trial participation. This may include exploring opportunities for pain free blood collection procedures, as well as improved technology that can run several tests from small blood samples in order to minimize the amounts and frequency of blood draws.
3. In order to increase acceptability and willingness for the collection of mucosal samples among future studies, there is need for community education regarding the collection and use of biological samples in medical and clinical research.
4. In order to enhance volunteer participation outcomes, trials physicians should consider incorporating mechanisms that will continuously engender volunteers and community members' trust and enhance individual decision making

6.3 Recommendations for Future studies

Although this study has met its objectives in providing an understanding of how volunteers experience clinical research participation, it was not possible to draw generalization of the findings given the small number of the study population. The experiences referenced to are in retrospect.

Future research should therefore consider a longitudinal mixed method study, where participants would be followed from the community seminars through to study completion with an aim of testing associations of individual characteristics and other factors on decision to participate in clinical trials.

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8.0 APPENDICES

Appendix 1a: Written Informed Consent -Survey Questionnaire Respondents

University of Nairobi, School of Medicine, KAVI- Institute of Clinical Research

Volunteers' Perceptions and Experiences of Clinical Research Participation in Kenya: Case Study of KAVI-ICR Volunteers

Purpose: Good morning/good afternoon, my name is….. and I am from the University of Nairobi. You have been requested to participate in a research study being carried out by Emily Nyariki, a PhD student at University of Nairobi. The goal of this study is to 'explore volunteers' perceptions and experiences and their potential impact on decision making to participate in clinical research'. To achieve this, the research will interview volunteers from selected KAVI clinical trials to learn about their perceptions and experiences of participation. These volunteers will include past participants as well as current. Others to be interviewed, will be participants that attended seminars, were eligible for enrolment but declined. Their involvement will be to understand why individuals decline to participate in clinical studies even after meeting the eligibility criteria. Findings from this study are expected to inform the conduct of clinical research and improve on volunteer experiences of clinical research participation. Specifically the study will seek to:- (i) establish the characteristics of individuals who participate in clinical research, (ii). Establish individuals' perceptions towards clinical research participation; (iii). Establish volunteers' experiences at various stages of trial participation and their potential impact decision making to participate; (iv). identify factors that enhance and /or constrain clinical research participation experience and to draw similarities and differences of participation experiences among volunteers in the KAVI studies.

Procedures: You are being asked to participate in this study because you agreed to be contacted by the KAVI community mobilizers. Following your participation in KAVI studies we feel you would be able to help us better understand the specific concerns about experiences of clinical research participation. If you agree to participate in this study, I will conduct an interview with you. You may also be asked to participate in a follow-up interview. The interview will take place in a private setting, and it will take approximately one hour. During this interview, you will be asked about your perceptions on HIV/AIDS research studies, your experiences in participating in such studies and decision-making processes for participation in such studies. You will be asked structured questions with optional answers and the interviewer will tick the appropriate answers as you shall provide

Risks/ Discomfort: There are no risks associated with your participation in this study. You

may feel uncomfortable answering some of the questions.

Benefits: There are no direct benefits related to your participation in this study. However, by sharing your perceptions and experiences of clinical research participation, these may help us to design better HIV clinical trials which will be more beneficial to ending the HIV/AIDS pandemic. You will not be paid for your participation, but you will be reimbursed for your travel expenses associated with your participation.

Confidentiality: The information we collect from you will be kept confidential. All references to your name will be deleted and your responses will be seen only by the researchers. The tapes containing your responses will be kept in a locked place, and only the Principal Investigator and research manager will have the key. Your name will not be used in any reports or publications of research. The tapes will be destroyed at the end of the study.

Right to Refuse or Withdraw: Your participation in this study is completely voluntary. You may choose to participate or not participate in this study. Your decision will in no way affect your current access to health services or your continued involvement in the HIV studies or future vaccine trials. If you do choose to participate, you can decide not to answer certain questions, or to stop the interview at any time . You are free to ask questions before signing this form. If you later want to talk to anyone about this research study or have questions, you may contact the study's Principal Investigator, Ms. Emily Nyariki- University of Nairobi, School of Medicine phone number is 0721 496920. You will be given a copy of this consent form, should you decide to participate.

Consent Form

I, the undersigned, have explained to the respondent in the language that s/he understands the purpose of this study, the procedures to be followed, and the risks and benefits involved.

Name of Interviewer: _____ Date: _____

Signature of interviewer: _____

RESPONDENT'S STATEMENT:

I have read this entire consent form (I have been clearly informed by the interviewer) and understand the purpose of the study, and the risk and benefits of participating in the study. Any questions have been answered to my satisfaction. I am also aware of the fact that if I decide not to participate in the study this will not affect my normal health care and management in

any way. Any questions or concerns about the study will be answered at any time by the Study PI, Emily Nyariki of the University of Nairobi, Telephone: 0721 496920,
Email address: nyarikiemily@yahoo.co.uk

I agree to take part in this study

Interviewee

Name ……(Optional)Signature ……

Or thumbprint ……

Date …….

Interviewer:

Name …… Signature ……

Date ……..……

Witness to consent if respondent is unable to read or write must be different from the person obtaining consent

Follow- up Interview Information Sheet

You are being requested for a follow-up interview to allow for deeper understanding of your experiences as a volunteer in KAVI HIV studies. If you agree to participate, you will be contacted by the community mobilizer within a period of two weeks from now. The interview which will last approximately one hour will be conducted here at the KAVI clinic. If you do find it hard to come here the interviewer may come to your home or place of work for which you will be requested to provide contact information, including a tracer map.

I agree to be contacted for a follow-up interview

Name ……. (Optional)

Signature ……Or thumbprint ……

Telephone Number…… Date ……

Interviewer Name…….Date……

Appendix 1b : Written Informed Consent for In-depth Interview Respondents

University of Nairobi, School of Medicine, KAVI- Institute of Clinical Research

Volunteers' Perceptions and Experiences of Clinical Research Participation in Kenya: Case Study of KAVI- ICR Volunteers

Purpose: Good morning/good afternoon, my name is… …… and my colleague is ……, we are from the University of Nairobi. You have been requested to participate in a research study being carried out by Emily Nyariki, a PhD student at University of Nairobi. This is a follow-up interview to get in depth understanding of your perceptions and experiences of clinical research participation. This interview aims understanding your experiences of participation from your initial contact with KAVI trials site and staff. In this study we aim at gaining understanding on the extent to which your perceptions and experiences at various stages of participation impacted on your overall decision making to be a study volunteer/ decline enrolment.

Procedures: If you agree to participate in this study, I will conduct an interview with you. The interview will take place in a private setting, and will take approximately one hour. During this interview, you will be asked to recount your perceptions on HIV/AIDS research studies, your experiences in participating in such studies and decision-making processes for participation in such studies. To be able to have a good account of your experiences you are requested to allow for tape recording of this interview.

Risks/ Discomfort: There are no risks associated with your participation in this study. You may feel uncomfortable answering some of the questions.

Benefits: There are no direct benefits related to your participation in this study. However, by sharing your perceptions and experiences of clinical research participation, these may help us to design better HIV clinical trials which will be more beneficial to ending the HIV/AIDS pandemic. You will not be paid for your participation, but you will be reimbursed for your travel expenses associated with your participation.

Confidentiality: The information we collect from you will be kept confidential. All references to your name will be deleted and your responses will be seen only by the researchers. The tapes containing your responses will be kept in a locked place, and only the Principal Investigator and research manager will have the key. Your name will not be used in any reports or publications of research. The tapes will be destroyed at the end of the study.

Right to Refuse or Withdraw: Your participation in this study is completely voluntary. You may choose to participate or not participate in this study. Your decision will in no way affect your current access to health services or your continued involvement in the HIV studies or future vaccine trials. If you do choose to participate, you can decide not to answer certain questions, or to stop the interview at any time You are free to ask questions before signing this form. If you later want to talk to anyone about this research study or have questions, you may contact the study's Principal Investigator, Ms. Emily Nyariki- University of Nairobi, School of Medicine phone number is 0721 496920. You will be given a copy of this consent form, should you decide to participate.

Consent Form

I, the undersigned, have explained to the respondent in the language that s/he understands the purpose of this study, the procedures to be followed, and the risks and benefits involved.

Name of Interviewer: _____ Date: _____

Signature of interviewer: _____

Respondent's Statement:

I have read this entire consent form (I have been clearly informed by the interviewer) and understand the purpose of the study, and the risk and benefits of participating in the study. Any questions have been answered to my satisfaction. I am also aware of the fact that if I decide not to participate in the study this will not affect my normal health care and management in any way.

Any questions or concerns about the study will be answered at any time by the Study PI,

Emily Nyariki of the University of Nairobi, Telephone: 0721 496920,

Email address: nyarikiemily@yahoo.co.uk

I agree to take part in this study

Interviewee name……(Optional) Signature / thumbprint……

Date …….

Interviewer Name …….

Signature…… Date ……

Witness to consent if respondent is unable to read or write must be different from the person obtaining consent

Appendix 1c: Written Informed consent- Key Informant

University of Nairobi, School of Medicine, KAVI- Institute of Clinical Research

Volunteers' Perceptions and Experiences of Clinical Research Participation in Kenya: Case Study of KAVI Volunteers

Purpose: Good morning/good afternoon, my name is….. …… and my colleague is ……., we are from the University of Nairobi. You have been requested to participate in a research study being carried out by Emily Nyariki, a PhD student at University of Nairobi. This study is looking at volunteers' perceptions and experiences of clinical research participation. We are interested in your views on volunteers perceive and experiences the various stages of clinical research participation.

Procedures: You are being asked to participate in this study because as a study staff in the KVI Clinical trials, we feel you would be able to help us better understand the specific concerns relating to volunteers perceptions and experiences of clinical research participation. If you agree to participate in this study, I will conduct an interview with you. The interview will take will take approximately one hour. During this interview, you will be requested to share your views on how volunteers perceive their participation in clinical research, what you perceive their knowledge and understanding of trial participation to be and how this affects their overall participation.

Risks/ Discomfort: There are no risks associated with your participation in this study. You may feel uncomfortable answering some of the questions.

Benefits: There are no direct benefits related to your participation in this study. However, by sharing your perceptions and experiences of clinical research participation, these may help us to design better HIV clinical trials which will be more beneficial to ending the HIV/AIDS pandemic. You will not be paid for your participation.

Confidentiality: The information we collect from you will be kept confidential. All references to your name will be deleted and your responses will be seen only by the researchers. The tapes containing your responses will be kept in a locked place, and only the Principal Investigator and research manager will have the key. Your name will not be used in any reports or publications of research. The tapes will be destroyed at the end of the study.

Right to Refuse or Withdraw: Your participation in this study is completely voluntary. You may choose to participate or not participate in this study. Your decision will in no way

affect your employment status. If you do choose to participate, you can decide not to answer certain questions, or to stop the interview at any time

You are free to ask questions before signing this form. If you later want to talk to anyone about this research study or have questions, you may contact the study's Principal Investigator, Ms. Emily Nyariki- University of Nairobi, School of Medicine phone number is 0721 496920. You will be given a copy of this consent form, should you decide to participate.

Consent Form

I, the undersigned, have explained to the respondent in the language that s/he understands the purpose of this study, the procedures to be followed, and the risks and benefits involved.

Name of Interviewer: _____ Date: _____

Signature of interviewer: _____

RESPONDENT'S STATEMENT:

I have read this entire consent form (I have been clearly informed by the interviewer) and understand the purpose of the study, and the risk and benefits of participating in the study. Any questions have been answered to my satisfaction. I am also aware of the fact that if I decide not to participate in the study this will not affect my employment status with the KAVI-ICR in any way.

Any questions or concerns about the study will be answered at any time by the Study PI,
Emily Nyariki of the University of Nairobi, Telephone: 0721 496920,
Email address: nyarikiemily@yahoo.co.uk

I agree to take part in this study

Interviewee

Name ……. (Optional)

Signature ……Or thumbprint ……

Date …….

Interviewer:

Name …….

Signature ……

Date ……

Witness to consent if respondent is unable to read or write must be different from the person obtaining consent

Appendix 2: Survey Tool

Volunteers' Perceptions and Experiences of Clinical Research Participation in Kenya: Case study of KAVI-ICR

Interviewer Code: _____ **Date_____**

Time started_____ **Time ended_____**

Study Name_____

(Instructions to the interviewer: Circle all applicable responses)

Section 1: Participants Characteristics

1. What is your sex? (*Jinsia yako ni gani*?)
   1= Female *(Mke)*
   2= Male (*mume*)
2. What is your date of birth? day |___|___| month |___|___| year |___|___|___|___|

Tarehe yako ya kuzaliwa ni gani? |___|__| *Mwezi* |__|__| *Mwaka* |___|___|___|___|

3. What is your marital status? *Hali yako ya ndoa ni gani?*
   1= Single (*sija hoa/holewa)*
   2= Married/ Co-habiting (*Nimeholewa/hoa)*
   3= Divorced/Separated *(Nimetengana)*
   4= Widowed*(mjane)*
4. Have you ever tested for HIV? (*Umewahi pimwa kwali ya virusi vya Ukimwi*?)
   1 = Yes *(Ndio)*
   2 = No (*La)*

   If **yes** what is your HIV status? *(Kama **ndio** hali yako ya virusi ni gani?)*
   1= HIV negative (*sina virusi)*
   2= HIV positive (*nina virusi)*
5. What is your sexual orientation?
   1= Heterosexual (kawaida)
   2= Homosexual (*shoga)*
   3 = Bisexual

6. What was the last level of education you completed? *(Kiwango cha masomo cha mwisho umehitimu ni kigani?)*

1= No formal education (*Sina masomo rasmi)*

2= Some primary education (kiasi kidogo *cha ya shule ya msingi*)

3=Completed primary (includes incomplete secondary) *(Umekamilisha shule ya msingi)*

4=Secondary (completed) *(Umekamilisha shule ya sekondari)*

5= College/University (*Chuo kikuu)*

7. What is your occupation? *(Kazi yako ni gani?)*

1= Unemployed *(Bila Ajira)*

2= Student (*Mwanafunzi)*

3= Casual worker *(Mfanyakazi wa kandarasi)*

4= Petty Vendor/Grocery (*Kazi Rejareja)*

5= Clerical work *(Kazi ya Ukarani)*

6= Permanent employed (Ajira ya Kudumu)

8. What is your monthly income level? (*Je Mshahara wako wa mwezi ni pesa ngapi*?)

1 = None (Hakuna)

2 = Below Kshs 2,000 (*Chini ya kshs 2,000)*

3 =Between Kshs 2, 000-5,000 (*Kati ya 2,000-5000)*

4 = Between Kshs 5,000 -7, 0000 (*Kati ya shs 5,000-7,000)*

Section 2: Participant's knowledge of HIV and clinical research (*Sehemu ya pili: Maarifa ya muhusika kuhusu virusi na utafiti wa kliniki)*

9. a). What study were you involved in? _____

(Umejihusisha na utafiti gani? _____

b). When did the study start? _____ (State month and year)

(Utafiti ulianza wakati) ? _____*(Taja mwaka na mwezi)*

c) When did the study end? _____(State month and year)

(Utafiti uliisha wakati gani? _____ (*Taja mwaka na mwezi*)

10. How did you know about the trial taking place? (*Je ulifahamu aje kuhusu jaribio lili-lokuwa linafanyika*?

1= Friend (*Rafiki)*

2= Relative (*Jamaa)*

3=Community mobilizer/Peer educator *(mushirikishi wa jamii/ mwalimu wa marika)*

4=Billboard/Poster *(Bango)*

5=Radio (*Redio*)

6=Chief's baraza *(Baraza La Chifu)*

7=Other,specify_____(*Nyingine,Bainisha)*_____

11. a). Did you attend any recruitment seminar? (*Je ulihudhuria semina yeyote ya kusajiliwa?)*

1=Yes *(Ndio)*

2=No *(La)*

b). If yes, state number of times (*Kama **ndio,** taja mara ngapi)*

1= Once *(Mara Moja)*

2= Twice *(Mara Mbili)*

3= Thrice (MaraTatu)

4= More than 3 times (*Zaidi ya mara tatu)*

c.) Where they were held? (Zoezi zilifanyikia wapi?)

1= KAVI Kangemi

2= KAVI KNH

3= Community *(jamii)*

d). If No, name any information meeting you held with the KAVI staff to receive information about the trial and number of meetings held._____

*Kama **La,** taja habari yoyote kuhusu mkutano uliofanya na afisa/mwajiriwa wa KAVI ili kupata habari kuhusu jaribio na mara ambao mikutano hii ilifanyika*_____

12. What motivated you to attend the KAVI recruitment seminars? (*Ni nini kilikutia motisha ili kuhudhuria semina za KAVI za kuajiri)?*

1= Information about HIV (*Habari kuhusu virusi vya ukimwi (VVU)*

2= Told they were giving an allowance *(Niliambia walikuwa wanapena pesa).*

3= Desire to volunteer *(Hamu ya Kujitolea)*

4= Possibility of receiving an HIV vaccine *(Uwezekano wa kupokea chanjo dhidi ya virusi vya Ukimwi).*

5= Possibility of getting a job with KAVI (*Uwezekano wa kuweza kuajiriwa na KAVI)*

6 = Health Check-ups (*Kuangaliwa hali ya Afya)*

7 = Other _____*specify (Lingine taja*_____

13. a). Mention one thing you liked about the seminars (*Taja kitu kimoja ulichokipenda kuhusu semina*_____

_____

b).Mention one thing you did not like about the seminars (*Taja kitu kimoja haukupenda kuhusu semina*_____

_____

14. What kinds of information were you provided with at the seminars (List all mentioned)
(Ni aina gani za habari ulizozipokea/ ulizotolewa katika semina)

_____

_____

15. In what forms was the information delivered? *(Habari zilitolewa kwa jinsi/namna gani?)*
1= Lecture (*Hotuba)*
2= Power point presentation (*Picha na komputa)*
3= Printed materials (*Vifaa vilivyochalishwa)*
16. How relevant was the information in helping make a decision to participate?
Je habari iliyotolewa ilikuwa na umanufaa gani katika kukuzaidia kufanya uamuzi wa kushiriki?
1 = Very relevant (*Umanufaa mkubwa)*
2 = Relevant (*Umanufaa*)
3 = A bit relevant (*Umanufaa* mdogo)
4 = Not Relevant (*Haikuwa ya manufaa*)
17. What language was used to convey they information
Ni lugha gani iliyotumika ili kuwasilisha habari?
1= English (*Kingereza*)
2= Kiswahili
3= Both English and Kiswahili(*Zote mbili Kingereza na* Kiswahili)
4= other, specify_____
*Nyingine,Bainisha*_____
18. How easy was the information to understand? *Habari ilikuwa rahisi kuelewa ?*
1=Very Easy *Rahisi sana*
2=Easy *Rahisi*
3=Very difficult *Ngumu sana*
4=Difficult *Ngumu*
5=Moderate *Wastani*

19. What aspects of the information did you find difficult to understand?

(List all mentioned starting with most difficulty) *Ni Nyanja gani ya habari ulipata ngumu zaidi kuelewa?(Taja zote kuanzia na ile ngumu zaidi)*

_____

20. Approximately how much time was allocated for these meetings?

(Takriban wakati upi uliopeanwa kwa mikutano hii?)

1= Less than 1 hour (*Chini ya saa moja)*

2= 1 hour (*Saa moja)*

3= More than two hours (*Zaidi ya saa mbili)*

4= More than 3 hours *(Zaidi ya saa tatu)*

21. Did you find the time allocated to be adequate?

(Je ulipata wakati uliopeanwa ukiwa wa kutosha)

1= Yes (*Ndio*)

2= No (*La)*

22. How approachable were the trial staffs? (*Ni kwa urahisi gani wafanyi kazi walikuwa wanafikiwa?)*

1= Very easily approachable (*Rahisi sana)*

2= Easily Approachable *(Rahisi)*

3= Not approachable *(sio rahisi)*

23. Were you able ask any questions during the seminars?

Je ulipata nafasi ya kuuliza maswali yoyote wakati wa semina?

1=Yes (*Ndio)*

2=No (*La*)

24. What was your overall experience with the information seminars?

Kwa jumla ozoefu/kujihisi kwako na semina za ujumbe

1 = Very good (*Mzuri mno)*

2 = Good (*Nzur)i*

3 = Average (*Kadiri)*

4 = Poor (*mbaya)*

25. How many screening sessions did you attend?

Ulihudhuria vikao vingapi vya uchunguzi?

1 = Once (*Kimoja)*

2 = Twice (*Viwili)*

3 = More than Thrice (Zaidi ya mara tatu)

26. Were any samples taken from you?

Je kulichukuliwa sampuli zozote kutoka kwako?

1 = Yes (*Ndio*)

2 = No (*La*)

If **yes** answer Question 27, if No Skip to Question 28

*Kama **ndio** jibu swali la 27, kama **la** ruka swali la no 28*

27. What samples were taken from you? (Tick all applicable)

Je ni sampuli gani zilichukuliwa kutoka kwako?

Sample type	**Tools of collection *Vifaa vya kutoa***	**Number of times *Mara* ngapi**	**Perception *Maono***	**Experience of Discomfort (Y/N) *Kujihisi* vibaya (*Ndio*/la)**
Nasal (*Pua/kamazi*)				
Blood (*Damu*)				
Saliva (*mate*)				
Urine *(mkojo)*				
Rectal(*sehemu za mkundu)*				
Cervical (*sehemu za uke*)				

28. Did you understand why you had to be screened?

Je ulielewa ni kwa nini ulikuwa ufanyiwe uchunguzi?

1 = Yes (Ndio)

2 = No (*La)*

29. What did you think of the whole screening process?*(Je ulifikiria nini kuhusu mchakato wote wa uchunguzi?)*

1 = Very Good (*Mzuri sana*)

2 = Good (*Mzuri*)

3= Fair (*Wastani)*

4= Bad (*Mbaya*)

30. How well did the trial staff inform you of what you were to expect and experience during the screening for eligibility? *Je ni kwa ufasaha ganiwafanykazi wajaribiowalikueleza kuhusu ya utakayo tarajia na kuyapitia katika uchunguzi kwa kustahiki*?

1 = Very well (*Vyema sana)*

2 = Well (*Vyema)*

3 = Not Well (*Sio vyema))*

4 = Did not (*Hawakunieleza)*

31. How different was the information given to you about screening different from what you experienced?

Je tofauti gani ilikuwa kati ya habari ulizopokea kuhusu ukagughuzi nayale uliyoyapitia?

1= Very different (*Tofauti sana*)

2 = Different (*Tofauti)*

3 = Not very different (*Si tofauti sana)*

Perception and experience of participation upon enrollment

32. Did you provide informed consent before enrolling into the study?

Je ulipeana ridhaa ya kutosha kabla ya kujiandikisha katika jaribio?

1 =Yes Ndio

2 = No La

33. How was the informed consent performed?

1= Verbally *Mdomo*

2 = In writing *Uandishi*

34. In what language was the informed consent document?

Habari katika ridhaa ya hati ilikuwa katika lugha gani?

1= English *Kingereza*

2 = Kiswahili

3 = Other, Specify_____

*Nyinginezo, Bainisha*_____

35. How long was the informed consent document?

Habari ya Ridhaa ya hati ilikuwa ya urefu mgani?

1 = Very long (*Mrefu sana)*

2 = Long (*Mrefu)*

3= Average (*Wastani)*

4= Short (*Mfupi)*

36. How was the informed consent process done?

Ridhaa ya hati ilifanywa kwa njia gani?

1 = Trial staff read it out for me (*Nilisomewa na mtenda kazi wa utafiti)*

2 = I Read it myself (*Nilijisomea peke yangu)*

37. How well did you understand the information provided in the informed consent?

Ni kwa uwema gani uliweza kuelewa habari zilizokuwa katika ridhaa ya hati?

1 =Very Well (*Vyema sana)*

2 = Well (*Vyema)*

3 = Average (*Wastani)*

4 = Not well (*sio vyema)*

38. How much time were you given before decision making to participate?

Ulipewa muda mgani ili kuweza kufanya uamuzi wa kuhudhuria?

1= A week (*Wiki Moja)*

2= Less than a week (*Chini ya Wiki)*

3 = 1 day (*Siku moja)*

4= A few hours (*Masaa Chache*)

39. How much longer did you take to make up your mind to enroll?

Je ilikuchukua muda upi ili kuweza kubadili akili yako kuhusu kujiandikisha?

1 = A week (*Wiki Moja)*

2 = Less than a week *(Chini Ya wiki Moja)*

3 = 1 day (*Siku Moja)*

4= A few hours (*Masaa machache)*

40. Did you need to consult before making up your mind?

Je Ilikubidi ushauriane kabla ya kufanya uamuzi wako?

1 = Yes *(Ndio)*

2 = No *(La)*

If yes, answer questions 41- and if No skip to Question 42

41. With whom did you consult and how did they react?

Je ulishauriana na nani na waliyachulia vipi?

(Tick against all consulted and use key below for Reactions received)

1= Very Supportive; 2 = Supportive; 3= A bit supportive; 4= Not Supportive

	Person Consulted *(Mshahuriwa)*	**Their Reaction (*mtazamo wao)***
	Parent/ *Mzazi*	
	Sibling (*ndugu/dada)*	
	Partner *(Mpenzi)*	
	Friend/ Colleague *(Rafiki/ ninaye fanya kazi*	

	naye	
	Pastor (*Kasisi)*	
	Health Worker/Doctor (*Mhudumu wa afya)*	
	Other Specify *Mwingine….taja*	

42. What was your overall experience with the informed consent process?

Kwa jumla uzoefu/maono yako juu ya mpangilio wa ridha ya hati?

1 = Very Good (*Mzuri* sana)

2 = Good (*mzuri)*

3 = Fair (*wastani)*

4 = (*Bad Mbaya)*

Experience upon enrolment

43. How frequent were the appointments? _____

Tarehe za kuonekana zilikuwa na ukaribu gani?

44. .How much travel time did you spend to get to the trial site?

Je ilikuchukua muda upi wa kusafiri ili kufika katika kituo cha jaribio?

1 = More than 4 hours *Zaidi ya saa nne*

2 = More than 2 hours *Zaidi ya saa mbili*

3 = More than 1 hour *Zaidi ya saa ,moja*

4 = Less than 1 hour *Chini yas saa moja*

45. What is your opinion of the waiting time at the trial site before being attended to?

Je maoni yako ni yapi kuhusu masaawa ya kusuburikatika kituo cha majaribio kabla ya kuhudumiwa?

1 = Very long (*Mrefu sana)*

2 = Long (*Mrefu*)

3 = Short (*Mfupi)*

4 =Very Short (*Mfupi sana)*

46. What was your overall experience with trial participation?

Je kwa ujumla uzoefu wako katika kushiriki katika jaribio ulikuwa upi?

1 = Very good (*Mzuri sana*)

2 = Good (*Mzuri*)

3 = Fair Wastani

4 = Bad Mbaya

47. Do you have any health related fears as a result of having participated?

Je uko na hofu zozote zinaohusiana na afyakutokana na kushiriki katika jaribio?

1 = Yes (*Ndio)*

2 = No (La)

48. Have you experienced any health related problem as a result of being a trial participant?

Je umepitia shida zozote za kiafya kutokana na kuwa mshiriki katika jaribio?

49. Could you be willing to participate in another study?

Je, utapendelea kushiriki katika zoezi lingine la uchunguzi?

1 = Yes (*Ndio)*

2 = No (*La)*

50. Could you recommend/ encourage other people to participate in an HIV clinical research?

Je unaweza pendekeza/ himiza watu wengine kushiriki katika uchunguzi wa kliniki kuhusu virusi?

1 = Yes *(Ndio)*

2 = No (*La*)

3 = Not sure *(Sina uhakika)*

Appendix 3: In depth Interview Tool for volunteers that completed the study

Personal Information

1. Tell us a little bit about yourself (Probe: age, marital status, sexual orientation, occupation, place of residence)

Volunteers' knowledge and perception about clinical research participation

2. What is your understanding of HIV clinical trials?
3. What are some of the clinical trials that you are aware of and where have they been conducted?
4. What is your understanding of clinical research participation? How important is clinical research participation and why? (Probe: for who should participate)
5. Please tell us how you came to learn of the clinical trials taking place here in KNH/ Kangemi (Probe: source of information (Public meeting, peer educator, CAB member, notice). How did you get recruited?
6. Please tell us about the study/trial that you are participating in?(Probe: What it is about, what it is testing, how long it is, nature of participants, its design).
7. a) What are the requirements of the trial that you are involved in (Probe: Time, samples, relationships)?

   b) How were you able to meet these requirements?

   c) What were your concerns about these requirements if any?

Volunteers' experiences at various stages of trial participation and their potential impact decision making to participate

8. a) How did you get recruited into the study? (Probe for contacts made, information provided and its form)

b) What were your experiences of recruitment process? (Probe: what was good and bad) What did you like about the recruitment process?

c) How did your experiences with recruitment help you decide on moving to the next stage of being enrolled?

9. a). Describe what you had to go through in order to be eligible for enrolment. What was your experience?

   b). What were your concerns about the enrolment procedures or processes if you had any?

   c). What did you like about the screening processes (Probe for time taken, procedures)?

d).What didn't you like about the screening process? (Probe for time taken, procedures)?

10 Please describe the process of enrolment and your experience of the informed consenting process (Probe for content, length, ability to understanding, terminologies, and perception of risk)?

11. a) Tell us about your decision making process to participate in KAVI clinical trials. (Probe: consultations made, with whom and their reactions

b). How did the people you interacted with during the screening/enrolment process influence your decision to participate? Are there people you know that are participating in the study, how long have you known them/ how did their being involved in the trials help your decision to participate?

Experience of participation after Enrolment

12. When did you get enrolled in this study?
13. What were your fears and concerns about clinical research participation before you got enrolled? Tells us how your fears were resolved on joining the study? What support did you receive from the trial staff and significant others in resolving your fears?
14. Tell about your participation in clinical research (number of visits, procedures, time and effort)? What happens in a typical mal visit (processes, counselling, testing and sample collection)?
15. What are some of the benefits of your participation? To what extent did the benefits of participation motivate you to remaining in the study?
16. How has your participation impacted on your social relationships and your personal life?
17. Would you be willing to participate in another study if approached (yes / no) Why?

Factors that enhance and /or constrain clinical research participation experience

18. What factors enhanced your experiences of participation? What factors constrained your experiences of participation?
19. How in your opinion can volunteers' research experience be improved?

Appendix 4: In depth Interview Tool for volunteers that declined enrolment

Personal Information

1. Tell us a little bit about yourself (Probe: age, marital status, sexual orientation, occupation, place of residence)

Volunteers' knowledge and perception about clinical research participation

2. What is your understanding of HIV clinical trials?
3. What are some of the clinical trials that you are aware of and where have they been conducted?
4. What is your understanding of clinical research participation? How important is clinical research participation and why? (Probe: for who should participate)
5. Please tell us how you came to learn of the clinical trials taking place here in KNH/ Kangemi (Probe: source of information (Public meeting, peer educator, CAB member, notice). How did you get recruited?
6. Please tell us about the study/trial that you are participating in?(Probe: What it is about, what it is testing, how long it is, nature of participants, its design).
7. a) What are the requirements of the trial that you are involved in (Probe: Time, samples, relationships)?

   b) How were you able to meet these requirements?

   c) What were your concerns about these requirements if any?

Volunteers' experiences at various stages of trial participation and their potential impact decision making to participate

8. a) How did you get recruited into the study? (Probe for contacts made, information provided and its form)

   b) What were your experiences of recruitment process? (Probe: what was good and bad)What did you like about the recruitment process?

   c) How did your experiences with recruitment help you decide on moving to the next stage of being enrolled?
9. a). Describe what you had to go through in order to be eligible for enrolment. What was your experience?

   b). What were your concerns about the enrolment procedures or processes if you had any?

   c). What did you like about the screening processes (Probe for time taken, procedures)?

   d).What didn't you like about the screening process? (Probe for time taken, procedures)?

10 Please describe the process of enrolment and your experience of the informed consenting process (Probe for content, length, ability to understanding, terminologies, and perception of risk)?

11.a) Tell us about your decision making process to participate in KAVI clinical trials. (Probe: consultations made, with whom and their reactions

b). How did the people you interacted with during the screening/enrolment process influence your decision to participate? Are there people you know that are participating in the study, how long have you known them/ how did their being involved in the trials help your decision to participate?

Volunteer decline of enrolment

12 At what point of your participation did you decline enrolment? What were your reasons for declining to enroll after being confirmed eligible?

13. What were your fears and concerns about clinical research participation before you got enrolled? To what extent were these fears resolved on joining the study? What support did you receive from the trial staff and significant others in resolving your fears?

14. Tell about your participation in clinical research was going to entail (number of visits, procedures, time and effort)? To what extent did these demands contribute to your declining enrolment? What influence did the people around you contribute to your decision to decline enrolment (Probe for influencers, their relationships)

15. What are some of the benefits of your participation? To what extent did the benefits of participation motivate you to remaining in the study?

16. How did your participation during the screening period impact on your social relationships and your personal life?

17. Would you be willing to participate in another study if approached (yes / no) Why?

Factors that enhance and /or constrain clinical research participation experience

18. What factors enhanced your experiences of participation? What factors constrained your experiences of participation?

19. How in your opinion can volunteers' research experience be improved?

Appendix 6: In depth Interview Tool for volunteers in current studies

Personal Information

1. Tell us a little bit about yourself (Probe: age, marital status, sexual orientation, occupation, place of residence)

Volunteers' knowledge and perception about clinical research participation

2. What is your understanding of HIV clinical trials?
3. What are some of the clinical trials that you are aware of and where have they been conducted?
4. What is your understanding of clinical research participation? How important is clinical research participation and why? (Probe: for who should participate)
5. Please tell us how you came to learn of the clinical trials taking place here in KNH/ Kangemi (Probe: source of information (Public meeting, peer educator, CAB member, notice).

Information on study involved in

6. Please tell us about the study/trial that you are participating in?(Probe: What it is about, what it is testing, how long it is, nature of participants, its design). At what stage of participation are you in currently

7. a). What are the requirements of the trial that you are involved in (Probe: Time, samples, relationships)?

   b). How were you able to meet these requirements?

   c). What were your concerns about these requirements if any?

Volunteers' experiences at various stages of trial participation and their potential impact decision making to participate

8. a) How did you get recruited into the study? (Probe for contacts made, information provided and its form)

   b) What were your experiences of recruitment process? (Probe: what was good and bad). What did you like about the recruitment process?

   c) How did your experiences with recruitment help you decide on moving to the next stage of being enrolled?

9. a). Describe what you had to go through in order to be eligible for enrolment. What was your experience?

   b). What were your concerns about the enrolment procedures or processes if you had any?

   c). What did you like about the screening processes (Probe for time taken, procedures)?

d).What didn't you like about the screening process? (Probe for time taken, procedures)?

10. Please describe the process of enrolment and your experience of the informed consenting process (Probe for content, length, ability to understanding, terminologies, and perception of risk)?

11.a) Tell us about your decision making process to participate in KAVI clinical trials. (Probe: consultations made, with whom and their reactions

b). How did the people you interacted with during the screening/enrolment process influence your decision to participate? Are there people you know that are participating in the study, how long have you known them/ how did their being involved in the trials help your decision to participate?

Experience of participation after Enrolment

12. When did you get enrolled in this study?
13. What were your fears and concerns about clinical research participation before you got enrolled? To what extent were these fears resolved on joining the study? What support did you receive from the trial staff and significant others in resolving your fears?
14. Tell about your participation in clinical research (number of visits, procedures, time and effort)? What happens in a typical mal visit (processes, counselling, testing and sample collection)?
15. What are some of the benefits of your participation? To what extent did the benefits of participation motivate you to remaining in the study?
16. How has your participation impacted on your social relationships and your personal life?
17. Would you be willing to participate in another study if approached (yes / no) Why?
18. What factors enhanced your experiences of participation? What factors constrained your experiences of participation?
19. How in your opinion can volunteers' research experience be improved?

Appendix 6: Key Informant Tool for Trial Staff

Personal Information

1. Tell us a little bit about yourself (Probe: current position, length of time in the position, responsibilities held in this position; any special training received as a trial staff; whether been involved in the recruitment and enrolment of volunteers in KAVI clinical trials, level and nature of interaction in the recruitment and enrolment process;)
2. What trials are currently being offered in this site?

Volunteers perceptions on clinical research participation

3. How do volunteers perceive their participation in clinical trials? (Probe : how their
4. What are some of the concerns volunteers raise concerning trial participation?
5. How do you address volunteer concerns?
6. What in your opinion motivates volunteers to participate in clinical trials?
7. What are the characteristics of individuals more like to participate in clinical trials?

Volunteers Experiences of clinical research

8. What is your experience with volunteer recruitment in clinical research? (how does your experience affect volunteers decision making to participate).
9. What kinds of information do you give volunteers when they come screening?
10. What are volunteer challenges with the consenting process?
11. How in your opinion do volunteers perceive their experience of participation?
12. How do volunteers perceive their experience with sample collection?
13. What can be done to improve overall volunteer clinical research participation?